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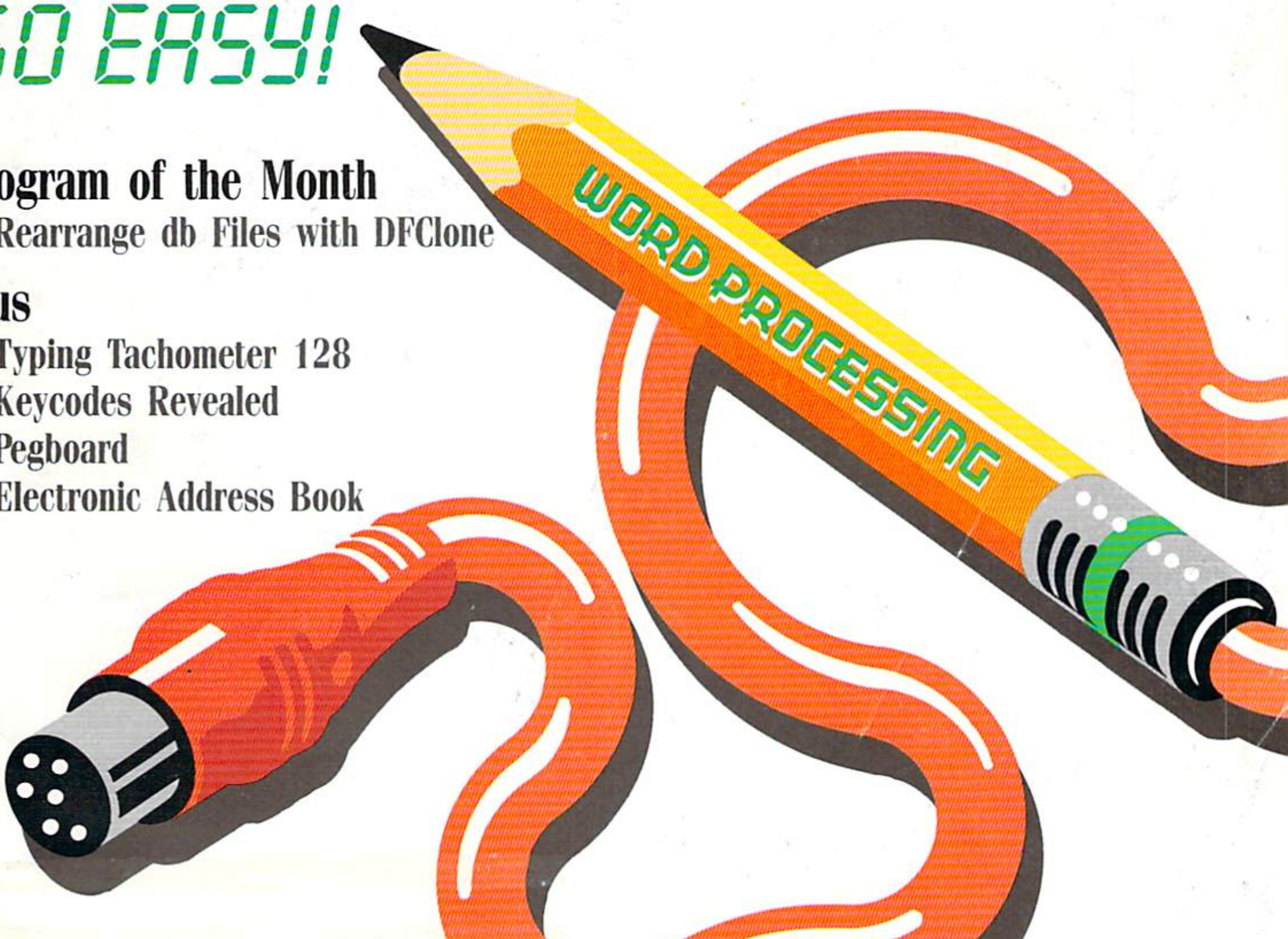

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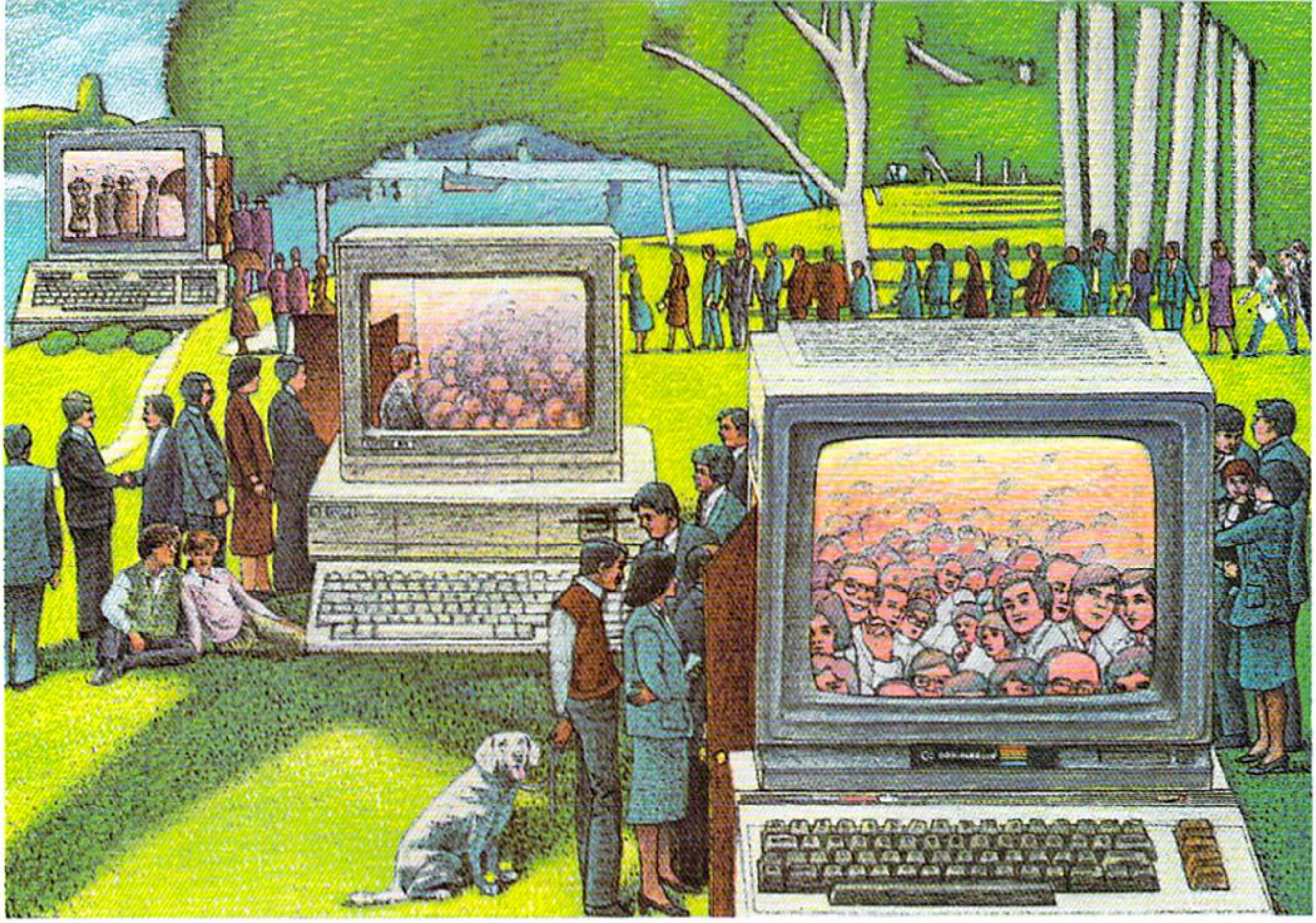

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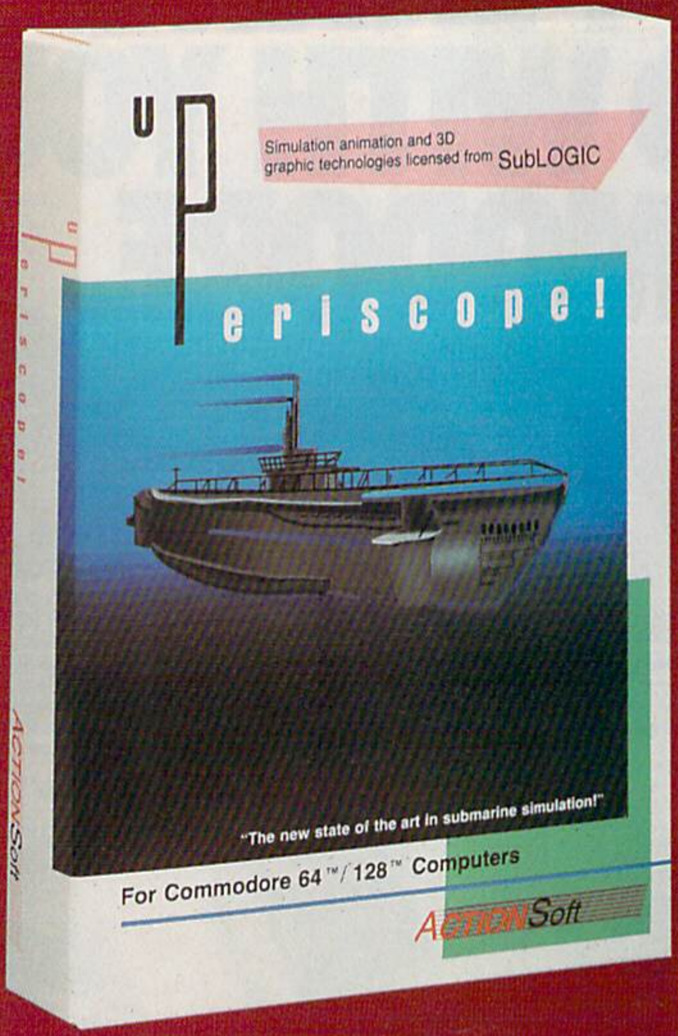
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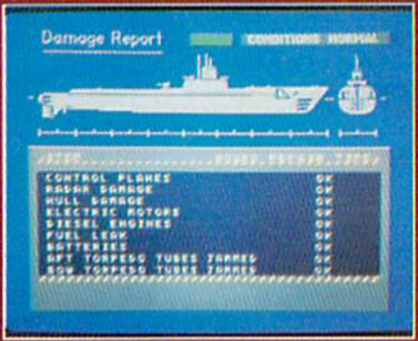
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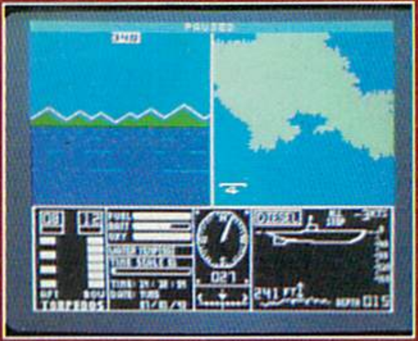
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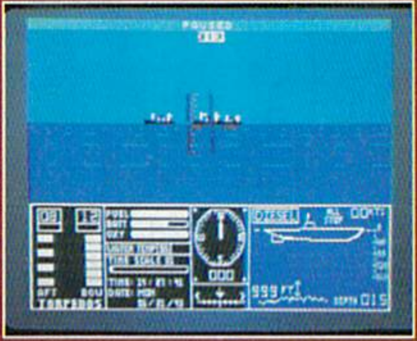
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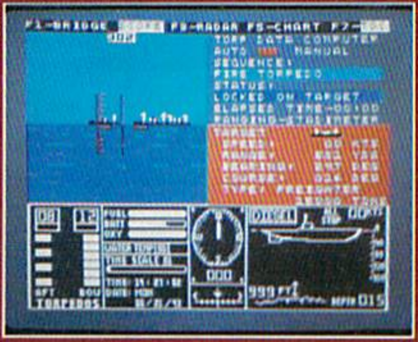
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F3-RADAR F5-CHART F7-

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RANGING-STADIMETER
TARGET
TYPE: FREIGHTER

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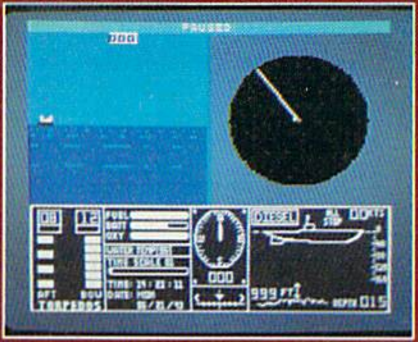
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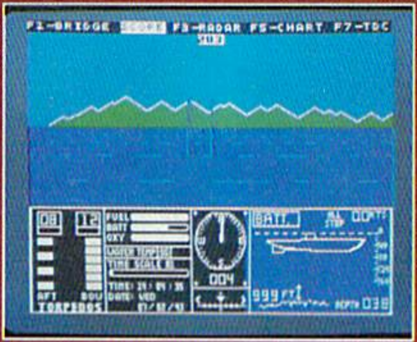
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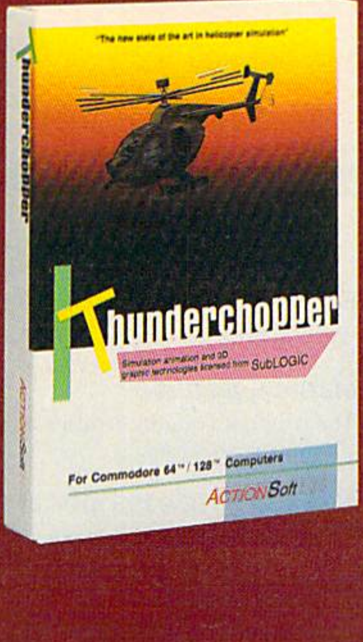
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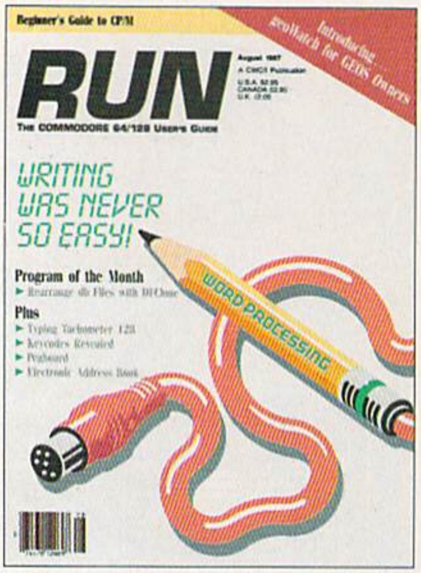
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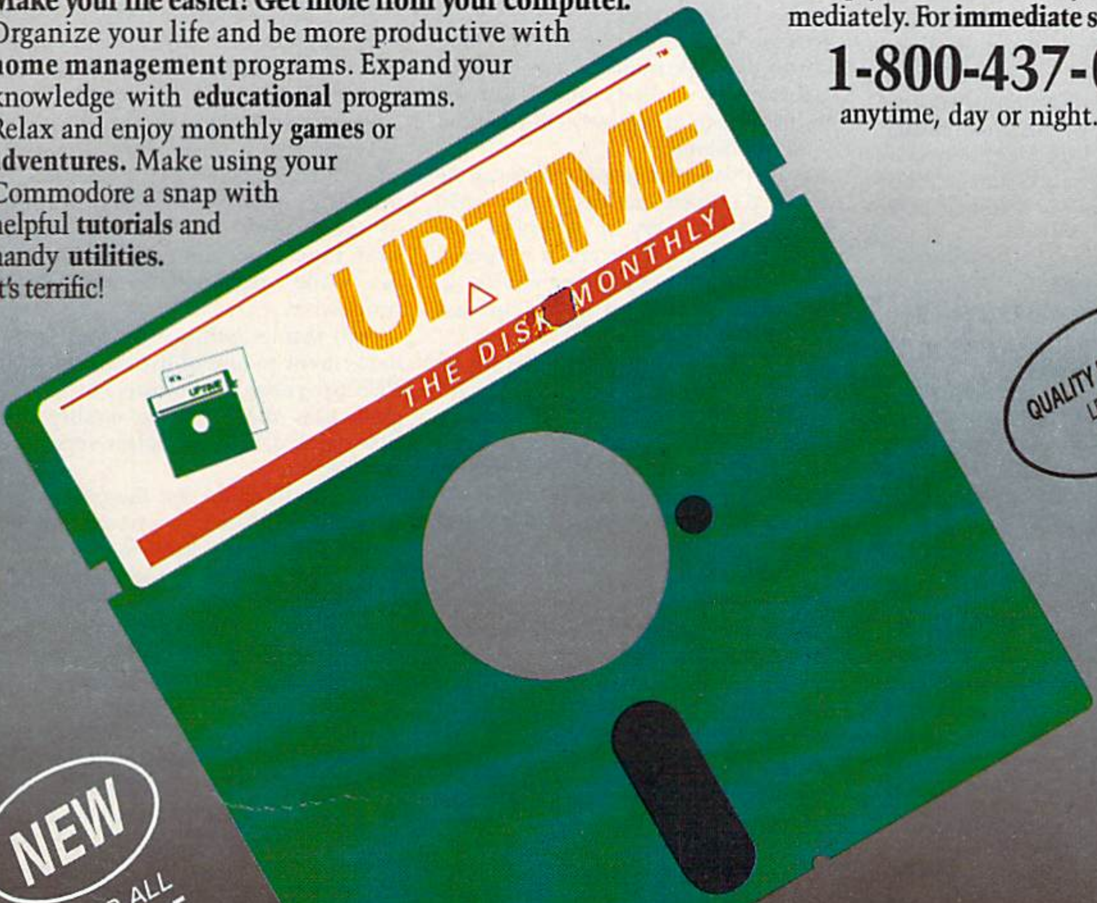

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RUNNING RUMINATIONS

Most users are convinced of the benefits of word processing . . . but there may be another side.

PROCESSING WORDS

I am grateful to the computing explorer who discovered word processing, which was the justification for my initial computer purchase. I reasoned that when I grew weary of games and wanted a more practical use for my computer, I could always use it to type memos or generate letters, essays, reports, stories or anything that I would normally commit to paper.

For many of us, word processing remains the primary computer application. It saves time, makes text composition easier and, in some cases, improves the quality of work.

If you haven't yet discovered the benefits of word processing, then you are unfamiliar with the ease with which you can make changes, correct misspellings and rearrange sentences in text quickly and easily. No longer do you have to suffer the drudgery and tedium of using a typewriter.

With just a few keystrokes, you can manipulate text, make corrections and produce copies. Especially where drafts and multiple copies are needed, word processing makes writing easier. After all, how many of us can write precisely and fluently what we mean on the first draft?

For even the most disorganized thinker, word processing allows the thoughts to be sifted and reordered later. It doesn't matter in which order the creative flow occurs—conclusion, middle or beginning. Word processing allows—and actually encourages—revision.

As useful as word processing is, however, I've met some professional writers who wouldn't touch a word processor with a polysyllabic word. They feel intimidated by computers and maintain that, with its automatic spelling correction and the ease with which revisions can be made, word processing encourages sloppy writing and thinking habits. (We heard the same argument regarding youngsters' math skills when calculators were permitted in the classroom years ago.)

Will processed words, like processed food, dull our senses? Is it a threat to our language skills and an impersonalizing factor in human correspondence? (Witness form letters, which, when generated on a word processor, take on the appearance of having been painstakingly crafted, when, in fact, they have been effortlessly churned out by the thousands.)

While misspellings and typos can be corrected quickly and easily on a word processor, I'm leery of programs that also claim the ability to check my grammar, punctuation and word choice (as much as it may need to be checked sometimes).

I also don't think John Updike's work is any less insightful when produced on a word processor. Nor do I think we would have been better served if our Founding Fathers had used a C-128 to draft the Constitution.

Word processing won't make you a better writer or improve your creativity, but it will greatly reduce the time it takes to produce your documents.

Word processing is simply another tool we must learn to master to survive in a world where time is money and speed in communication is so vital.

In the not-too-distant future, I suppose we'll be using machines that understand the spoken word, which will make word processing obsolete. But, until then, we have some new advances in word processing to look forward to.

So, if you've never been introduced to word processing—or even if you've been using the same word processor happily now for the past few years—you'll want to take a look at the current line of word processing software featured in this issue.

THIS MONTH

The latest generation of word processors for both the 64 and 128 feature compatibility and integration. Some are compatible with GEOS and the new RAM expanders. Many word processors that are part of so-called integrated packages allow you to share data between word processing and spreadsheet and database programs. Others include spelling checkers, thesauri, outliners and the ability to include graphics in your documents.

For a closer look at today's crop of word processors, which vary widely in price (from $10 to $100), see this month's cover story on page 38.

We also include in this issue a C-128 program that is both instructional and a lot of fun. "Typing Tachometer 128" tests your typing speed and accuracy by using witty quotations and quips from famous personalities. You'll have fun while you improve your typing proficiency.

Also this month, we present an enhancement to one of the most popular *RUN* programs. DFClone is a utility program that allows you to modify your files created with the latest version of Datafile 3.6.

Be sure to check out the first installment of "geoWatch," a new column that begins this month. Each month we will examine the latest enhancements and new products (including third-party developments) for GEOS. The column, written by GEOS expert Matthew Stern, provides readers with answers to their questions and hints and tips on using GEOS. With over 400,000 GEOS owners, this column will generally show *RUN* readers how to take full advantage of this new operating system. Let us know if we're on the right track with this new column.

If you find the prospect of using the CP/M mode on your C-128 too intimidating, "A Beginner's Tour of CP/M" will lead you step by step into the world of CP/M, and you'll emerge with a better understanding of how to take advantage of the promise of this useful operating system.

This month you'll also encounter a simple yet challenging game (entitled "Pegboard") for your C-64, as well as *RUN*'s regular columns, reviews, applications and utility programs.

Dennis Brisson

Dennis Brisson
Editor-in-Chief

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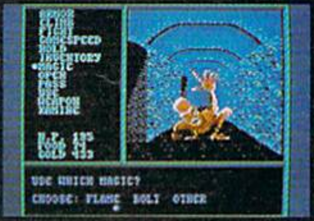
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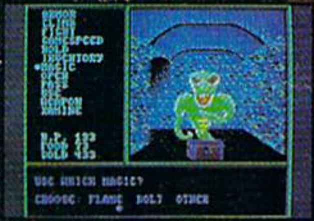
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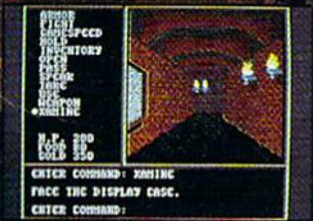
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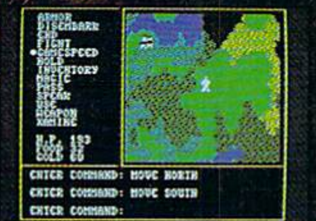
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ENTER COMMAND:

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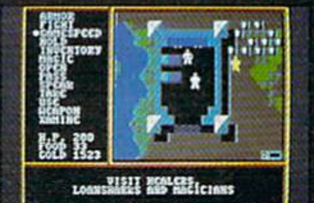
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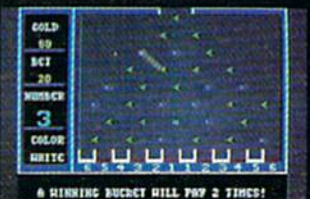
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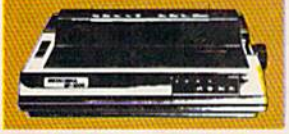

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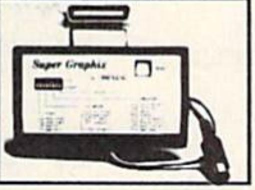

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Compiled by JIM BORDEN

$404 C-128 ENGINEERING DISASTER

Run this program to see a picture of an object that cannot exist in three dimensions. It's a classic illustration of engineering gone wild!

```
0 REM IMPOSSIBLE BLOCK-THOMAS SMITH
10 COLOR1,7:COLOR0,2:GRAPHIC1,1:CIRCLE,58,
   158,11,9
20 CIRCLE,111,158,11,9: CIRCLE,162,158,11,
   9
30 DRAW,49,153TO180,60TO273,60TO151,154
40 DRAW,174,160TO273,80TO273,60
50 DRAW,70,160TO184,75TO234,75TO123,160
60 DRAW,100,153TO184,90TO184,75:DRAW,184,9
   0TO215,90
```

—THOMAS B. SMITH, GALLIPOLIS, OH

$405 C-128 SPRITE PRINTER

If you need an enlarged version of your sprite images on hard copy, just load your sprites and run this program.

```
0 REM SPRITE PRINTER-M.G.HAGELSIEB
10 FORI=2816TO2933:READA:POKEI,A:C=C+A:NEX
   T:IFC<>14000THENPRINT"CHECK DATA!":END
20 INPUT"{SHFT CLR}SPRITE #";S:S=3520+S*64
   :GOSUB60:POKE2827,D:POKE2831,B:S=S+63:G
   OSUB60
30 INPUT"SCREEN OR PRINTER (S/P)";P$:IFP$=
   "P"THENOPEN4,4:CMD4
40 POKE2914,D:POKE2923,B:SYS2816
50 IF P$="P"THEN PRINT#4:CLOSE4:END: ELSE
   END
60 B=INT(S/256):D=S-256*B:RETURN
70 DATA 169,0,141,116,11,169,7,141,117,11,
   169,128,133,252,169,14,133,253
80 DATA 172,116,11,177,252,141,118,11,169,
   7,141,117,11,173,118,11,24,10,141
90 DATA 118,11,176,8,169,32,32,210,255,76,
   54,11,169,35,32,210,255,206,117
100 DATA 11,174,117,11,224,255,208,223,238
    ,116,11,173,116,11,201,3,208,23
110 DATA 169,0,141,116,11,24,169,3,101,252
    ,133,252,165,253,105,0,133,253,169
120 DATA 13,32,210,255,169,191,197,252,240
    ,3,76,18,11,169,14,197,253,240,3
130 DATA 76,18,11,96,0,255
```

—MARCOS GLEZ. HAGELSIEB,
GUADALAJARA, JALISCO, MEXICO

$407 EASY DISK NOTES

If you'd like to send a note to a friend who doesn't know how to use your notepad program, just write your note, with line numbers, as if it were a listing for a Basic program. Save your note as the first program on your disk with a filename such as Load & List.

When your friend looks at the directory, he'll most likely load and list that program. But, if he loads and runs the first program, he'll get a Syntax error. In that case, your friend will list the program to find what caused the error, and your note will pop onto the screen.

—ED ADAMS, GRAND FORKS, ND

$408 DISK FILE COUNTER

Usually a disk fills to capacity long before its directory does, but if you've saved many short files, you may not know how full the directory actually is. If you use my program to read

►

TRICK OF THE MONTH

$406 64 PERFECT TYPIST IMPROVEMENT

One part of *RUN*'s 64 Perfect Typist program that irritates me is the screen location of the checksum, which prints below the line I've just entered. This poses a problem when I want to check old listings or use an automatic line numbering program. So, I wrote the changes below to relocate the checksum to the home position. Make these line changes to the program.

Line 30: change ML + 154 to ML + 183
Line 40: change 16251 to 20566
Line 80: change ML + 141 to ML + 161

Also enter these lines:

```
0 REM 64 PERFECT TYPIST IN HOME POS-M.B.
  ENDERS
260 DATA 021,141,240,003,166,214,202,142
262 DATA 242,003,169,000,133,212
263 DATA 169,019,032,210,255,169
266 DATA 018,032,210,255,169,042,032,210
270 DATA 255,169,000,174,240,003,032,205
280 DATA 189,162,002,189,241,003,032,210
290 DATA 255,202,016,247,164,011,174,242
300 DATA 003,134,214,169,013,032,210,255
310 DATA 096,146,032,032
```

—MICHAEL B. ENDERS, FORT WAYNE, IN

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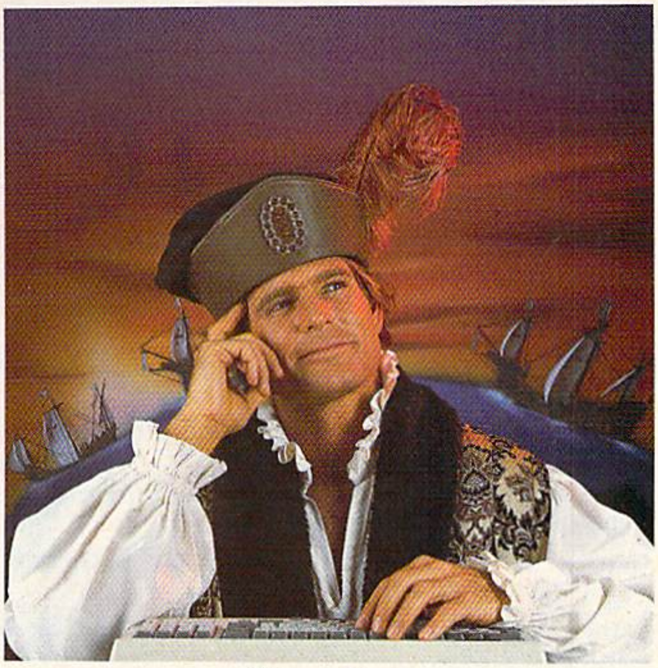

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your disk's directory and count the number of files, you'll know when to start using a fresh disk.

```
10 REM FILE COUNTER-LEO BRENNEMAN
20 PRINT"{SHFT CLR}":OPEN1,8,15,"I0:":Z$=C
   HR$(0)
30 OPEN 2,8,2,"#":S=1
40 PRINT#1,"U1:";2;8;18;S
50 GET#2,T$,S$:T$=T$+Z$:S$=S$+Z$
60 FORI=2TO226STEP32
70 PRINT#1,"B-P:";2;I
80 GET#2,A$:IFA$<>""THENN=N+1:GOTO110
90 GET#2,A$,A$
100 FORJ=1TO16:GET#2,A$:NEXTJ
110 NEXTI
120 T=ASC(T$):S=ASC(S$):IFT>0THEN40
130 CLOSE2:CLOSE1
140 PRINT"{3 SPACEs}THERE ARE"N"FILES ON T
    HIS DISK."
```

—Leo W. Brenneman, Erie, PA

$409 C-64 Direct Mode Disk-Error Reader

The next time you need to read the disk error channel with your C-64 and you don't have the DOS Wedge in memory, try this handy line in Direct mode:

```
OPEN1,8,15:POKE58,0:{about 20 spaces}INPUT#1,A$,B$,C$,D$:
 ?A$,B$,C$,D$:CLOSE1
```

The exact number of spaces isn't important, as long as you type in about 20.

—Richard Penn, Montreal, Quebec, Canada

$40A C-64 Getspeed

This short machine language program prints a sequential file to your monitor screen. It will prompt you for the filename, then print and close the file.

```
10 REM 64 GETSPEED - IVO SALMRE
20 FORA=820TOA+57:READB:POKEA,B:NEXT
30 DATA 169,005,162,241,160,003,032,189,25
   5,169
40 DATA 003,162,008,160,003,032,186,255,03
   2,192
50 DATA 255,162,003,032,198,255,032,159,25
   5,201
60 DATA 032,240,016,032,183,255,201,064,24
   0,009
70 DATA 032,207,255,032,210,255,076,078,00
   3,169
80 DATA 003,032,195,255,032,204,255,096
90 INPUT"FILENAME TO READ";A$
100 FORX=1TOLEN(A$):POKE1008+X,ASC(MID$(A$
    ,X,1)):NEXT
110 POKE821,LEN(A$):SYS820
```

—Ivo Salmre, Norwalk, CT

$40B Saving Files on Q-Link

You can save QuantumLink's on-screen files with the F3 key by simply using an existing sequential filename to append the Q-Link file to it.

—Fred Mayes, Bartlesville, OK

$40C Letter Boxes

This program prints a border along the edges of your posters and letters. First print the border (use 8½ × 11-inch paper), then run the paper through a second time to print your text. It should work with any 1525-compatible printer and on other printers with a few changes to the program.

```
10 REM BORDER - TOM FONTANA
20 W=80:H=107:W$=STR$(W-1)
30 W$=RIGHT$(W$,LEN(W$)-1)
40 CLOSE4:OPEN4,4,0
50 FORX=1TOW:TP$=TP$+"{COMD P}":NEXT
60 FORX=1TOW:BM$=BM$+"{COMD Y}":NEXT
70 PRINT#4,TP$CHR$(8):PRINT#4,CHR$(15);
80 FORX=1TOH:PRINT#4,CHR$(15)"{COMD J}"CHR
   $(16)W$"{COMD L}"CHR$(8):NEXT
90 PRINT#4,CHR$(15)BM$:CLOSE4
```

—Tom Fontana, Kansas City, MO

$40D C-128 Help-Key Caution

The reverse-video highlight on the 40-column Help display can cause a problem within quotes. To see why, run this program:

```
10 B$ = " BELL"
20 R$ = "RING" + B
30 PRINT R$
```

Now press the help key, move the cursor up to line 20 and add a $ after the letter B. Press return and run the program again to see what happens. Use the help key to find the error, but list the line to edit it in 40-Column mode.

—Jack Norvell, Memphis, TN

$40E Useful Goto

Here's an easy way to put comments in your programs without wasting time or using extra space typing REM. Put your comments at the start of your program, beginning with line 2, and put the Goto command in line 1:

```
1 GOTO20
2 YOUR COMMENTS
3 ON LINES 2-19
```

If you use a renumber utility, you can include a Goto and the line number in your comments, along with a brief name for each subroutine. These will be renumbered, along with the program, but will not cause any problems when you run the program.

—Chance Agrella, Prescott, AZ

$40F Quick C-128 Function Key Disable

Entering a single Poke command will convert your C-128's function keys to the C-64's function key values. To perform this magic, enter the incantation POKE 828,183. It will change the vector that's used to interpret all function keys. The Get command will now return the regular values for the C-64, but the run key will give an ASCII value of 131 and the help key will give a value of 132. Enter POKE 828,173 to get back your old definitions.

—Charles Lavin, Coral Gables, FL

Continued on p. 88.

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NEWS AND NEW PRODUCTS

This month, consider a 64C replacement case for your C-64; designing your own video productions; or finding out what the current events were in the year you were born.

Compiled by HAROLD R. BJORNSEN

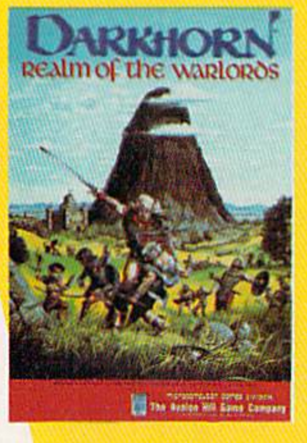
FORWARD TO THE PAST

Time Traveler, for the C-64, finds out the current events in the year you were born and gives a printout of the significant happenings as far back as 1900. Who won and who lost the World Series, the Academy Awards, prices on consumer goods and services, Presidents, the cost of an average house and the average annual income are some of the items included. The program also prints a calendar the way it appeared the month you were born. It's available for $39.95 from Nationwide Computer Industries, 205 McCormick Ave., Hawkinsville, GA 31036.

Check Reader Service number 406.

STORM OVER DARKHORN

Darkhorn, a fantasy-strategy game from the Avalon Hill Game Company (4517 Harford Rd., Baltimore, MD 21214), allows up to four players to compete at the same time without waiting for one player to decide his next move. You can play a short game lasting thirty minutes or one lasting an afternoon. Randomly generated maps make each game a different strategic challenge. It's available for the C-64 for $30.



Get set for the fight of your life against the Darklord, in Avalon Hill's Darkhorn.

Check Reader Service number 410.

POWERLOAD

Powerload, from Jance Associates (PO Box 234, East Texas, PA 18046), is a software package designed for users of the X-10 Powerhouse Computer Interface Controller Model #CP290. It's menu-driven, loads 128 events in under three minutes, provides hard copies of events, gives your C-64 direct control of the interface and loads all Powerhouse functions, with menu prompts to assist you. It's available for $20.

Check Reader Service number 402.

COVER ME

Grapevine Data Products of Canada (PO Box 1886, Charlottetown, Prince Edward Island C1A 7N5) introduces the Slim Line 64 Replacement Case, which replaces the C-64 housing with the case for the new 64C. The case is complete with all necessary parts and instructions, and the only tool required for assembly is a Philips head screwdriver. The case is available for $34.95.

Check Reader Service number 401.

PLAY THE CLASSICS

Chipmunk Software (PO Box 463, Battleground, WA 98604) has released a new line of software for the C-64. Strider's Computer Classics is a series of classical music on computer disk. Each disk contains at least one hour of classical music selections, with a wide variety of instrumentation. Historical notes about the composers and the music are displayed on the screen as the music plays.

Current titles include Bach: Two-Part Inventions, Three-Part Inventions, Favorites and The Well-Tempered Clavier; Mozart: Sonatas and Viennese Sonatinas; Antigua (featuring different composers); and Clemente: Favorites. New titles are added to the series each month. Each disk is available for $9.95.

Check Reader Service number 405.

IMPROVE YOUR CHANCES OF WINNING

The Lotto Program (Soft-Byte, PO Box 5701, Dayton, OH 45405) performs an analysis of the past winning lotto numbers to show the probability of numbers likely to come up in future drawings. It works for all six- and seven-number lotto games, including Canada's. The program also produces charts from which you pick "hot" and "cold" numbers, patterns, sums of digits and odd-even numbers. It's available for the C-64 for $24.95.

Check Reader Service number 403.

SPIFF UP YOUR VIDEOS

Video Title Shop is a creativity program that allows you to design video productions with your C-64. You can choose from a variety of font styles and sizes, create borders, edit your work, and import picture backdrops from graphics paint programs or use special effects such as fizzles, wipes and scrolling to create specialized video productions for home, school and business. It's available from Electronic Arts (1820 Gateway Drive, San Mateo, CA 94404) and retails for $29.95.

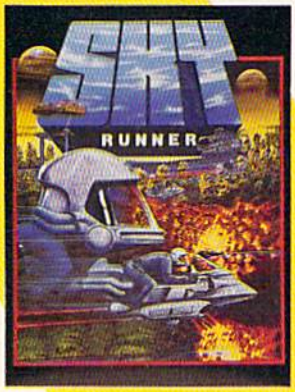
Check Reader Service number 404.

FOUR FROM FREE SPIRIT

Free Spirit Software (538 S. Edgewood, LaGrange, IL 60525) has released four new programs for the C-64 and 1541 disk drive.

Super 64 Librarian is a disk-cataloging and library system that reads and stores disk directories in 15 categories. You can redefine the categories yourself or leave them at default. $29.95.

The Weapon of Choice is a text-adventure game in which you become a young man of the Plains seeking to build a reputation as a great warrior on a land not yet called America. $29.95.



You'll need lightning-fast reflexes to save 24th century mankind from the deadly drug, Sky, in Spinnaker's Sky Runner.

Wheel & Deal is a game of conniving and competition for two to six players, who may cut deals for an exclusive piece of real estate, charge exorbitant rents, speculate in the stock market, and more. $19.95.

Fun Biorhythms prints personalized biorhythm charts by entering your birthdate and the present date. Hard copies of the physical, emotional and intellectual cycles for ten to 100 days are provided. $9.95.

Check Reader Service number 400.

Talking Software

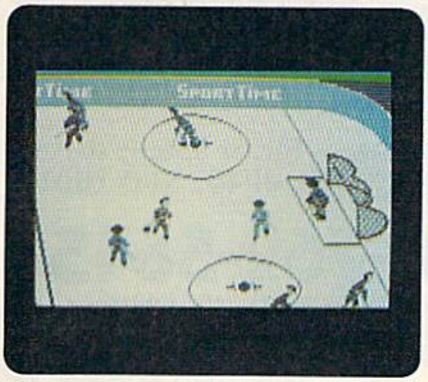
Covox (675-D Conger St., Eugene, OR 97402) has released Voice Key, a memory-resident voice recognition program for the C-64. It provides voice command capabilities for word processing, game and utility programs when used in conjunction with the company's Voice Master hardware. It's available for $29.95.

Check Reader Service number 413.

Slapshot

Superstar Ice Hockey, a computer-hockey simulation from Mindscape (3444 Dundee Rd., Northbrook, IL 60062), allows one or two players the chance to battle the computer or each other, to coach a team and to manage a league. You take the ice as center or goalie, fire slapshots, hip-check opponents, make slick passes and block shots. As the coach, you set up and rotate your players' lines. As general manager, you trade and draft players, send them to training camp and aim to build a weak franchise into a contender for the SportTime Cup. It's available for the C-64 for $34.95.

Check Reader Service number 412.



Manage your own team to win the SportTime Cup in Superstar Ice Hockey, from Mindscape.

Now, *That's* Power!

More than half the world's computing power is in the United States, according to estimates published in Computer Industry Almanac, a 780-page reference volume. The figure is based on the estimated number of mainframes, minicomputers and microcomputers in use and on the estimated average processing power per computer in MIPS (millions of instructions per second).

The Almanac ranks the U.S. first with 12.7 million MIPS—nearly 54 percent of the world's computing power. Japan places second with 2.5 million MIPS (10.4 percent). The United Kingdom has almost 7 percent, while West Germany and France account for 3.8 and 3.1 percent, respectively. Rounding out the top ten are Canada, Italy, Australia, the Netherlands and Brazil.

SSI Gets D&D

Strategic Simulations, Inc., a publisher of war-strategy and fantasy games, and TSR, Inc., producer of the Dungeons & Dragons fantasy role-playing game, have signed a letter of intent to enter into a strategic alliance. The five-year leasing agreement gives SSI exclusive worldwide rights to produce and market a series of games based on TSR's Advanced Dungeons & Dragons. At least ten different role-playing and several action game versions are planned for the C-64. The games will appear on the market beginning in early 1988.

An Adventure in Speed

In Sky Runner, a joystick-controlled arcade adventure from Spinnaker (One Kendall Square, Cambridge, MA 02139), you assume the role of a Sky Runner, hired rebel protector of 24th century mankind, to remove the spell of the deadly and addictive drug Sky, which keeps the masses in a docile state. Your objective is to destroy the huge Sky harvesting machines and their surrounding defense towers. It's available for the C-64 for $29.95.

Check Reader Service number 411.

Commodore Names New General Manager

Jim Dionne has been appointed general manager in charge of Canadian and Latin American operations for Commodore International Limited, Irving Gould, chairman and chief executive officer, announced. Dionne will oversee all activities of Commodore Business Machines, Ltd., the Canadian subsidiary, and supervise Latin American distribution.

"Jim Dionne has a proven track record and will be a real asset to our Canadian and Latin American activities," Gould said.

Dionne, who will be based in Commodore's Canadian headquarters in Agincourt, Ontario, was formerly involved in a private venture with a Toronto-based distributor of Apricot microcomputers.

Sail to New Ports

MicroProse Software (120 Lakefront Drive, Hunt Valley, MD 21030) has released Pirates! for the C-64. In this adventure-simulation game, you are a 17th century pirate who plunders ships and ports throughout the Caribbean. You ►

and your friends engage in simulated sword fights, ship-to-ship duels and land battles in your roles as English, French, Dutch or Spanish buccaneers trying to seize fortunes and build reputations. You must also sail your ship through constantly changing weather conditions and deal with the unique sailing properties of the barques, sloops, frigates and galleons of the era. And don't be surprised if your crew decides to mutiny. Pirates! is available for $39.95.

Check Reader Service number 407.

SOFTWARE THAT SINGS

If you're interested in music, or just like collecting catalogs, you'll certainly want a copy of *Coda*, from Wenger Corp. (Music Learning Division, PO Box 448, Owatonna, MN 55060). The 160-page software music catalog covers all popular home computers, including the Commodore 64 and 128.

Categories covered include Fun & Entertainment, with such software titles as Algorithmic Composer, At the Movies and Music Processor; Learning & Teaching, with titles like Bassoon Fingerings, 12-Bar Tunesmith and Keyboard Blues; Sequencing & Recording (titles include Super Sequencer, Muse and Track Star); Music Printing (Music Writer 64 and The Music Shop); Voice Librarians; Sound Libraries; and Programming Aids. The book is printed on heavy stock, with many colorful illustrations throughout. The 1987 edition is available for $4.

Check Reader Service number 408.

STATIONFALL

Sumbody at Infokom asked Floyd to rite this and Floyd sed sure!!!

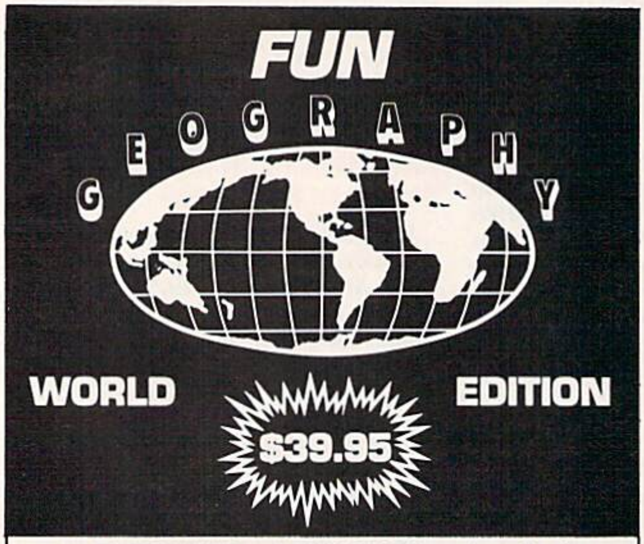
You cum with Floyd on new adventure from Infokom, okay! You meet old frendz (like Floyd) and make new frendz (like Plato). And best of awl, we get to play more hider-and-seeker! Yay! —Floyd

That's right. Floyd's back! You'll join him in a new adventure, Stationfall, in which the survival of the entire galaxy rests in your hands. You're enlisted in the Stellar Patrol, and your life is as tedious as ever. Your assignment: travel to a nearby space station and pick up a supply of trivial forms. What a bore! Until you find that your companion for the journey is the mischievous, playful Floyd. You can get Stationfall and again meet Floyd on your C-64 for $34.95. Infocom, 125 Cambridgepark Drive, Cambridge, MA 02140.

Check Reader Service number 409.

ABACUS ONLINE AT Q-LINK

Abacus, a publisher of software and books for the Commodore computer user, has increased its customer support channels through the online services of QuantumLink, a telecommunications network service. Subscribers can get up-to-date information on new products and upgrades to existing ones from Abacus, and a question-and-answer forum answers the most commonly asked questions about the company's software and books. For more information, contact Abacus at 616-241-5510. ■



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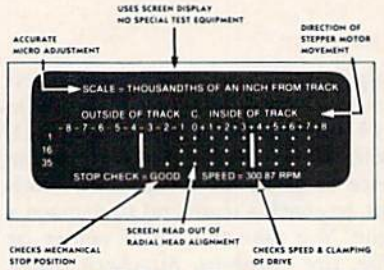
1541 Physical Exam Sample Screen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RUN AND THE AMIGA

Concerning the RUNning Ruminations editorial in last May's *RUN*, I find it difficult to understand why you don't include the Amiga in your coverage. I realize that the ratio of 64/128 users to Amiga users is presently about 20 to 1, but the Amiga is liable to become more common. If you covered the Amiga now, you'd have an established base of Amiga owners among your readers at that later time. In addition, those of us who've been enjoying *RUN* all along but are upgrading to the Amiga would have reason to continue receiving your magazine. All in all, you'd have more readers.

—PETE HENDLER
LILLINGTOM, NC

I think *RUN* should cover the Amiga. Let's face it, we all must grow with technology. If *RUN* doesn't, I'm afraid it'll go the way of other magazines that have refused to keep up with the times.

Also, many of *RUN*'s advertisers sell Amiga software and hardware along with their C-64 and C-128 products, and, of course, *AmigaWorld* advertises in your pages. How can you ignore the Amiga and run these ads at the same time?

Last but not least, I don't think you're being faithful to your readers, as you maintain in last May's editorial. I started with a VIC-20, then progressed to a C-64, and now I have a C-128 and an Amiga. Unfortunately, I'm forced to buy two different magazines—*RUN* and *AmigaWorld*—to keep up on them both. Instead of being faithful to your readers, you're letting them down just to sell more magazines.

—BERNARD K. KOTCHKOWSKI
ANDOVER, NJ

The main reason we don't include the Amiga in our coverage is space. RUN *is only so big, and when the Amiga came along, the decision was made to cover it in a separate magazine. Otherwise,* RUN *would not be able to deal adequately with the C-64 and C-128, thus becoming of limited value to everyone.*

We feel we must do full justice to the 64 and 128, both of which are continuing to sell at a good rate, an indication that they are by no means obsolete. We expect that people will continue to use them and that there will be plenty to say about them for a long time to come.

—EDITORS

MARCHING TO GETTYSBURG

After 25 years of miniature and board gaming, I decided I'd try a computer game—Gettysburg: The Turning Point—on my son's C-64. I was quite pleased; it captured my avid interest for one or two hours (one or two turns) a day over a two-week period.

Finally, those magic words flashed across the screen: "The computer wishes to withdraw. Do you wish to continue?" My wife told me to save the disk. "It'll be the only time you ever beat a computer," she said. Of course, I had given the computer command of the Rebels, who I believe are historically at a disadvantage.

Gettysburg is a well-thought-out game. My next goal is to take command of the Rebs and win!

—LAWRENCE R. LENZ
POMPTON PLAINS, NJ

BERKELEY ON THE BALL

I'd like to say a few words about an outstanding company—Berkeley Softworks. I was an early user of GEOS; so early, in fact, that it wasn't yet available in stores in my area, and I had to order it through the mail.

I'd been using the program for a little over a year when it stopped loading. I tried it on other C-64s, and it still wouldn't boot. I wrote to Berkeley and told them how much I liked GEOS, that I knew the warranty had long since expired and that I didn't expect them to replace it, although I was returning the disk in hopes that they would.

Not only did they replace the disk at no cost to me, they replaced it with a version that is quieter and updated to include more programs. I couldn't be more pleased.

—JAMES C. MANN
MULLAN, ID

LOOKING FOR HINTS

I think the Learn To Walk Before You RUN page in *RUN*, with its review of Basic procedures for typing in program listings, is written in a helpful way. Most "how to" articles in magazines such as yours are too esoteric.

However, as one who isn't interested in typing in programs, I'd like to see a different sort of article—one on hints for running programs that are already on disk. For instance, only recently I learned that L followed by shift/O can be substituted for the word LOAD.

—WILLIAM D. ROBERT
LAKELAND, FL

The type of information you're looking for is in the C-64 and C-128 manuals. The more you use your computer and the manual, the more of it you'll find. RUN*'s Magic column also includes handy short cuts fairly often, and you'll come across even more by talking with other computerists.*

—EDITORS

BETTER ELECTRONIC EXPRESSIONS

I've found that Solutions Unlimited's Icon Factory makes using Broderbund's Print Shop and Unison World's PrintMaster on my C-64 much more effective, because it lets me move graphics between the two programs. It also lets me alter the size of the graphics and make other revisions. I recommend their Billboard Maker program, too.

—KOLMAN GLICKSBERG
GLENCOE, IL

Icon Factory and Billboard Maker got good reviews in Software Gallery in last May's ►

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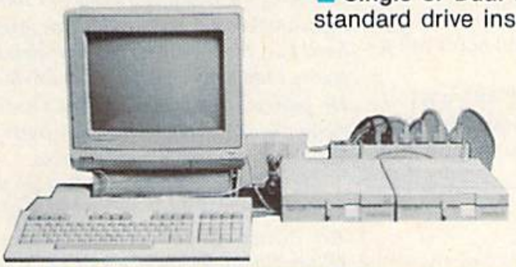

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—EDITORS

TAX ADVANTAGE UPDATE

Joseph Shaughnessy's articles in *RUN* have added immeasurably to my understanding and enjoyment of Commodore computing. Last April's "Taxing Your Commodore," in which he reviewed several tax preparation programs, was no exception.

In that article, Mr. Shaughnessy admitted to a slight prejudice toward a program called The Tax Advantage from Double Eagle Software, because it's the one he uses. In this instance, I must disagree with him. In early 1986, I purchased a copy of The Tax Advantage (Commodore version 86.02) to use with my C-128 and 1571 disk drive in preparing my 1985 Federal return. The software was being distributed at that time by Arrays, Inc., under the name Continental Software.

I got nothing for my money. The main part of the program wouldn't load, and I knew there was nothing wrong with my equipment, because all my other C-64 programs worked fine. A telephone call (not toll-free) to Arrays elicited little help. All that the individual I spoke with could say was the program had been thoroughly tested on a 1541 disk drive, and if I could get my hands on one of those, it would probably work fine. He also said that if I returned the original disk to them, they would send me a new one.

I returned the disk, along with a letter detailing the problems I was having. I never received an answer, despite the fact that I had returned the warranty card about three weeks earlier. Needless to say, I prepared my 1985 tax return the old-fashioned way—by hand.

—DAVID C. COFFIN
OLD BETHPAGE, NY

Henry Hilton and Harry Koons, the authors of The Tax Advantage, stated to us that they founded Double Eagle Software to market their program after their relationship with Continental Software/Arrays, Inc. had been terminated for non-payment of royalties.

Henry Hilton said Double Eagle would try to assist anyone who's had trouble with a Tax Advantage package marketed by Continental Software/Arrays and hasn't gotten satisfaction from that firm, because such problems reflect poorly, although erroneously, on Double Eagle. He pointed out, however, that Continental/Arrays is really the responsible party for the 1985 tax year and earlier editions.

Mr. Hilton also mentioned that the program Continental/Arrays is now marketing as The Tax Advantage II is not *a version of the Hilton/Koons program, and that in any case the 1986 tax year version of Tax Advantage II for the Commodore was never released.*

RUN *readers who've had an experience similar to Mr. Coffin's can contact Double Eagle at 2210 Wilshire Blvd., Suite 875, Santa Monica, CA 90403, phone 213-459-9748 and they'll see what they can do.*

—EDITORS

LETTER PERFECT

I would like to thank you for publishing the PrintRite 64 program by Bob Kodadek in last May's issue. For a long time, I've been looking for a program that would produce true descenders on my printer. PrintRite 64 is a real plus for those of us who have a Commodore 1525, MPS-801 or MPS-803 printer. By the way, it'll also work with the Word Writer word processor.

In addition to PrintRite 64, I particularly enjoy the program in the "Dashing Off the Dots" article by Joe Novak in your November 1986 issue. It's the best Morse code program I've used.

—WALLACE B. GARNER
BIG SPRING, TX

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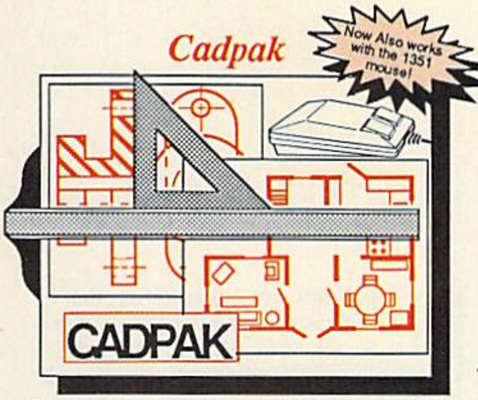
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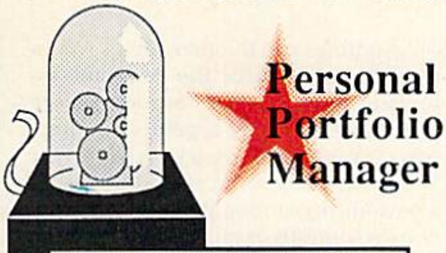
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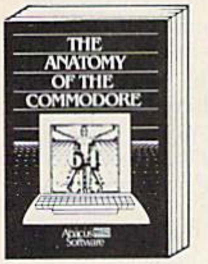
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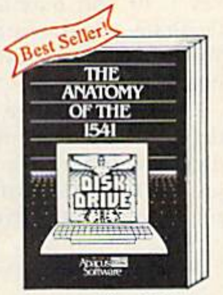
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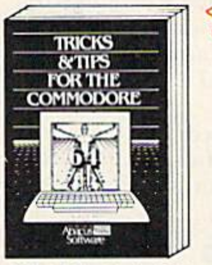
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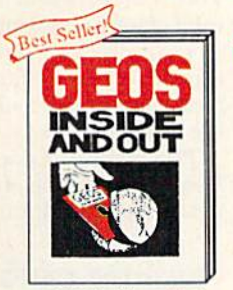
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Software Gallery

On this month's review menu are home inventory and graphics programs, a murder mystery, a golf game and two dandy simulations.

Compiled by BETH S. JALA

What's Our Worth? C+

Take Stock in Your Home By Listing Your Resources to Disk

Home inventories are a good idea: Everybody should have records of the serial numbers of their computer, audio/video, photo and hobby equipment. An itemized list of all your possessions that also includes the value of each item would be priceless in the event of a catastrophic loss.

What's Our Worth? is a home inventory program for people who want to use their C-128 to maintain an account of personal properties, but don't know anything about using database software.

What's Our Worth? is so easy to use that unless you've never seen a computer before, you can leave the instruction booklet tucked safely away. Simply plug the security dongle into port two, insert the disk and turn on your computer. If you forget to put the computer in 40-Column mode, What's Our Worth? sounds off and tells you to re-boot.

The first time you use What's Our Worth?, you'll be prompted to adjust the screen colors to your liking. Your preference is recorded on the program disk and automatically consulted the next time you load the program.

The next step is to format a data disk. This 15-minute operation prepares both sides of a disk to hold up to 3000 entries, more than enough for the average household.

What's Our Worth? is now ready to begin accepting data. Each record contains five pieces of information—the item's name, serial number, cost, description and location. The sizes of the individual data fields vary from 17 characters allocated for serial numbers to 29 characters for each item's description. The program accepts values up to $999,999.99 and displays a running total of the net worth of your possessions.

Assuming you'll enter items on a room-by-room basis, the program automatically enters the location of the previous item to save repetitious typing. After every tenth entry, What's Our Worth? saves the latest records to disk—a sensible precaution that prevents power interruptions or other problems from destroying hours of work.

What's Our Worth? will search through all records on the data disk to find those items that meet any designated criteria, display them on-screen or print them. The program will also sort your entire inventory, either by cost or alphabetical order. I don't believe you would want to sort a large inventory too often, because it took me 18 minutes to complete a 1500-item sort.

What's Our Worth? comes with two utility programs. One is designed to let anyone who used the C-64 version convert his existing data disk to C-128 format, and the other is intended to provide you with that all-important security blanket—a backup of your data disk. This is an excellent idea; however, the instructions reveal that it requires you to swap disks six times, a process that can take over three hours with a full disk. Needless to say, I took my chances with the original disk.

The problems with What's Our Worth? stem from the very thing that makes this program attractive in the first place—its simplicity. For instance, there is no way of customizing the output routines to match your printer. The printing routine drove my G-Wiz-interfaced Gemini 10X rather slowly, and the printed format turned out to be ill-designed as well.

With less than 100 total characters in each entry, What's Our Worth? could utilize compressed type fonts to print each record on a single line. Instead, the printout places each field on a separate line, complete with title, and prints the records two abreast. This cumbersome format allows only 20 items to be printed on a single page. Also, alphabetized records must be read in a zig-zag pattern from left to right as you continue down each page.

While data entry is simple, the one-minute disk delays after every ten items tend to slow you down. The search routine is also rather sluggish: It took over eight minutes to make a single search of 1000 records. Most database programs designate one line of each record as a key field and maintain it in RAM to facilitate rapid searches. What's Our Worth? relies exclusively on its relative disk files.

If you're a novice or someone who doesn't want to be bothered designing a database, What's Our Worth? might be just the thing to satisfy that need to "do something productive" with your com- ►

REPORT CARD

A	**Superb!** An exceptional program that outshines all others.
B	**Good.** One of the better programs available in its category. A worthy addition to your software library.
C	**Average.** Lives up to its billing. No major hassles, headaches or disappointments here.
D	**Poor.** This program has some problems. There are better on the market.
E	**Failure.** Many problems; should be deep-sixed!

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—JOHN PREMACK
LEXINGTON, MA

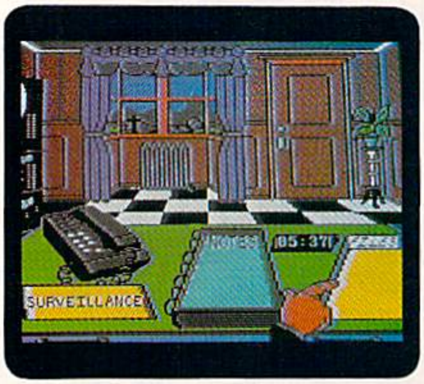
KILLED UNTIL DEAD _ B+

Good Evening;

Tonight's Story Is

About a Murder

The setting is the venerable Gargoyle Hotel, meeting place of Agatha Maypole, Sidney Meanstreet and three more of the world's top mystery writers. Dubbed the "Midnight Murder Club," they're gathered to present a most unusual series of murderous little brain twisters. In each of some 21 scenarios, your challenge—as Hercule Holmes, tech-wise descendant of you-know-who!—is to prevent a murder that is scheduled for midnight.



Phone, files, notes, tapes: Which are the helpful clues in Killed Until Dead?

Beginning on that fateful morning, you know only that both killer and victim are among the five writers. To succeed, you must identify the intended victim, weapon, location, murderer and motive before the clock strikes 12. Piddle around, and the MMC loses a member; err on any of the five items in your accusation, and *you* are the one Killed Until Dead!

Fortunately, your office in the hotel is well stocked with the latest in high-tech surveillance and information-retrieval gadgetry. Pressing a button can call up hint-packed dossiers, initiate a phone call or display the goings-on at any important location, including the suspects' rooms.

Aside from letting you eavesdrop on juicy conversations, this last feature also simplifies scheduling break-ins, which yield clues vital to the investigation. To search a room, however, you must first display the necessary sleuthing savvy by correctly answering a multiple-choice question on detective trivia. Miss it and the break-in fails, closing the room for several critical minutes of game time before you can try again.

Success hinges on the information needed to crack a suspect's confident facade during an inquisition. The fact that your interrogation is conducted by phone presents no difficulties, because you can see the subject at all times. The closer a question comes to unearthing really meaty clues, the more flustered is his or her facial expression. Remember, no matter how much these characters loath one another, all five are determined to make a fool of the world's greatest detective!

Finally, to eliminate the need for laborious note-taking, the game supplies extensive recording and crime-busting computer facilities. All break-in, phone conversation and surveillance data is not only saved, but available for instant retrieval and can even be sorted under several categories.

Grouped according to four levels of challenge—from elementary through super-sleuth—each scenario is a separate game, good for an hour or more of very entertaining play. Unfortunately, five of the 21 listed cases wouldn't load from my original copy. I obtained a second copy from the vendor, found exactly the same problem, and have notified Accolade. [Editor's note: According to Accolade's public relations firm, the first batch of software that went out to reviewers was defective. However, *RUN* was assured that the bug has been fixed in all copies going out to consumers.]

Despite this technical problem, I enjoyed the good graphics, clever innovations and smooth, fast-moving action of Killed Until Dead. *(Accolade, 20863 Stevens Creek Blvd., Cupertino, CA 95014. C-64/$29.95.)*

—JEFF HURLBURT
HOUSTON, TX

TRACKER _____________ A

Your Challenge:

Destroy or

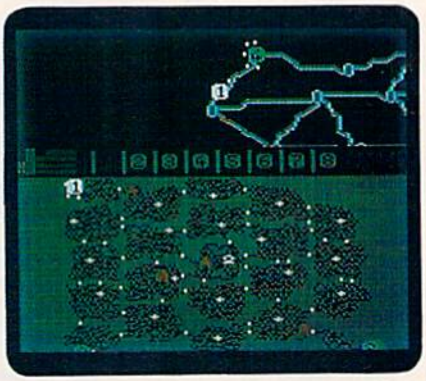
Be Destroyed

Tracker is a paradox as far as strategy games go. It incorporates some of the aspects of flight simulation with the methodology and nerves of steel needed to play chess. Add to this the replayability of traditional war games and an excellent implementation of artificial intelligence, and you'll be prepared to miss a few meals, burn a little midnight oil, or toss this game down in utter desperation.

A rather ugly rock planetoid called Zeugma IV, which until recently was an outpost for every conceivable pleasure known to man, is the setting for Tracker. At this outpost, known as Centrepoint Complex, robotic police vehicles called Cycloids are dispatched to keep the peace. These laser-armed nasties were deemed too irrational and too unsafe to patrol crime-free worlds, so they were sent to maintain the hundreds of trackways that are on Centrepoint.

Things have gone seriously wrong on Zeugma IV: An evil force has taken over the computer-controlled Cycloids. The inhabitants of the nearby planet Calibos have requested your help, and you have answered their call. Hastily gathering together a group of bandits and star pilots known as the Tactical Remote Assault Corps—Trackers—you are off to destroy the communications center of Centrepoint.

Easier said than done. The Centrepoint trackway complex is made up of 22 interconnected sectors split into three main rings—Central, Inner and Outer. You must successfully progress through all the other sectors to reach the center ring.



Use the Long Range Scanner to view the complete map in Tracker.

Your first task is to capture a sector, which will make it a safe zone against marauding Cycloids. This involves destroying the communication center of that sector. By careful use of independently controlled Skimmers, you can slowly work toward Centrepoint.

Take heed: The Cycloids won't stand idly by in your path. They'll do their best to catch you in the trackways and blow your Skimmers into atoms.

Energy and damage levels must be carefully watched. Cycloids are deadly adversaries, and one encounter can leave shield strength perilously low. Bumping into the side of a trackway also drains a player's shield level, and crashing into a node wall destroys Skimmers instantly.

I was impressed with the level of intelligence of the Cycloids. Up to 32 Cycloids can be in the trackways at any given time. The nearer a Skimmer gets to Centrepoint, the more clever and ruthless your opponents become.

The graphics, while not outstanding, are more than adequate to set the stage for Tracker. Map representation and first-person, scrolling views are nicely done. The sound from within the trackways as you skim above the narrow alleys conveys a feeling of loneliness and desperation that is, at times, frightening.

Documentation is very good, giving you more than enough to get into the game without a lot of memorization. A key-command summary card and a short novel are also included.

Succeeding at Tracker takes patience, guts and the ability to exploit occasional holes in the Cycloid's defense. At the end of each game, a running tally tells you how well you've done throughout the course of play. Each game is so totally different in strategy from the last that your ratings—if you're like me—will be disgustingly low for many games to come. However, Tracker is still a worthwhile investment. *(Firebird, Inc., PO Box 49, Ramsey, NJ 07446. C-64/$39.95.)*

—JOHN V. RYAN
APO, NY

GRAPHICS INTEGRATOR 2 ________ B

Mix and Match
As You Cut and Paste
While You Link and Insert

Have you ever wanted to load your friend's Flexidraw pictures in your Doodle! program? Use your Doodle! artwork in geoPaint? Manipulate the vast treasury of Print Shop and Newsroom clip art into your KoalaPad pictures? Add an illustration to a PaperClip document?

The problem with Commodore graphics programs is that they use different file formats and resolutions. You can't load a picture from one program into another.

Inkwell Systems' Graphics Integrator 2 provides a solution to this problem by converting graphics from one format to another. This program can change a high-resolution picture, like one from Flexidraw, so that it can be read by a multicolor graphics program like KoalaPad. Graphics Integrator 2 also transforms pictures into data files that are printable by PaperClip and similar word processors. As an added bonus, Graphics Integrator 2 not only prints your pictures, but it also contains a slide show program that can display your handiwork.

It's hard to find a graphic you can't convert, because Graphics Integrator 2 covers most of the popular programs: GEOS, Doodle!, KoalaPad, Computer-Eyes, Newsroom, The Print Shop, PrintMaster, CADPAK 64, Super Sketch, Animation Station, Blazing Paddles, Flexidraw and Billboard Maker.

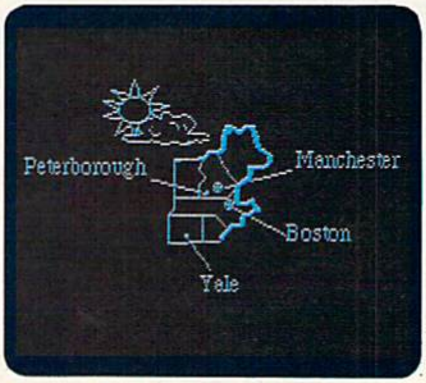
Converting your graphics is easy, because the procedure is menu driven. You select options with the keyboard or Flexidraw lightpen. First, you choose the format of the original picture—high resolution, multicolor or clip art graphic. Graphics Integrator 2 then shows you a list of graphics on your disk, and the picture you choose appears on the screen.

Once you've decided on your graphic, you can save it in the same format for a different program or change it into a different format. If you're turning a picture into Print Shop or Newsroom format, you have to crop the part of the picture you want to convert. Graphics Integrator 2 can save the converted graphic under another name, leaving your original file intact.

I had no problem with the conversion: I switched my Print Shop graphics into Doodle! format and back again. When converting from Print Shop to Doodle!, my art wasn't distorted; however, I did notice some distortion when changing from Doodle! to Print Shop. This is a problem with changing resolutions rather than with the software itself. If you try to convert a high resolution picture into multicolor, the graphic is slightly elongated. Changing a color picture into Print Shop or Newsroom format strips out the color and requires touch-ups, which is why Inkwell Systems recommends that you don't do it.

Graphics can be changed into GEOS format, too, but you can't convert a geoPaint file directly into another format. You cut or copy a portion of the graphic into a photo scrap and then convert it into Doodle!. Transforming another graphic to geoPaint means changing it to Doodle! format and then to a GEOS photo scrap.

When I tried to read a GEOS disk that didn't contain a photo scrap, I received a "DISK ERROR 0 0 0" message. Translation: "No photo scrap on disk"; I thought my disk had been shredded! This error isn't mentioned anywhere in the manual. After I caught my breath and inserted the proper disk, the conversion worked well, and I was able to load my GEOS artwork into Doodle!. After you convert the GEOS graphic to Doodle!, it's easy to turn it into something else.



A map from Graphics Galleria in Doodle! format, modified in geoPaint and pasted into a geoWrite document.

With its External Print feature, the Graphics Integrator 2's graphics file creator lets you produce a printing file that can be used by PaperClip and other word processors. This simply means that the file is sent directly to the printer without being read or interpreted by the word processor.

The graphics file has to be in Doodle! or Flexidraw format before converting. Depending on the type of printer you have, you can print one or two pictures side by side. You can crop your graphic vertically to the size you want. Graphics Integrator 2 tells you how many text lines it needs. In your PaperClip document, you adjust the page length by the number of lines for that graphic and type in the external print command where you want it to appear.

I wasn't completely satisfied with this feature. Instead of getting menus, you get text prompts, but you can't use your lightpen. I also noticed some printing problems here in early versions of the program.

I was pleased with Graphics Integrator 2's printing and slide show features. With its wide variety of dot matrix, ink-jet, black-and-white or color printers,

Continued on p. 32.

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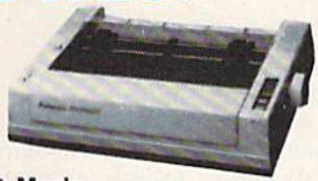

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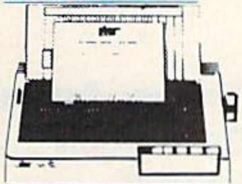

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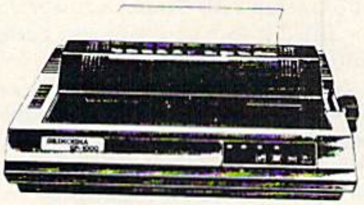

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From p. 29.

Graphics Integrator 2 can print any graphic. If you've been frustrated by your graphics program's lack of printer drivers, Graphics Integrator 2 can give you the printed copy you always wanted. The slide show is a must for user's groups, small businesses, or anyone who wants to show off artwork or make a presentation. It uses a number of special effects and works with one or two 1541 or compatible disk drives. Imagine what it could do with a hard disk!

The real value of Graphics Integrator 2 is seen in converting graphics from one format to another. You'll find this especially useful with clip art collections like Inkwell Systems' own Graphics Galleria. One collection, "Maps of the World," includes state and international maps and weather symbols. "Clip Art Potpourri" contains miscellaneous sports, music, computer and other symbols. These art pieces come in Flexidraw or Doodle! format, but with Graphics Integrator 2, you can convert them to others. For example, I took a map of New England from the "Maps of the World" Doodle! file, converted it to a GEOS photo scrap with Graphics Integrator 2, modified it with geoPaint and pasted it into my geoWrite 2.0 document.

Graphics Integrator 2's graphics conversion feature makes it a worthwhile program by itself, and the printing and slide show functions make it even more attractive. However, it needs more understandable error messages, a consistent user interface and some quirks ironed out in the PaperClip printing files. *(Inkwell Systems, PO Box 85152 MB290, San Diego, CA 92138. Graphics Integrator 2 for the C-64/$29.95; four disks of Graphics Galleria clip art, $24.95 each.)*

—MATTHEW STERN
IRVINE, CA

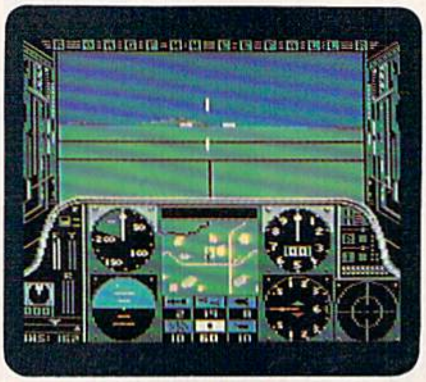
GUNSHIP ____________ A+

Here You Go, Into the Wild Blue Yonder, Flying High Into the Sun

For everyone who has eagerly awaited the arrival of Gunship since it was first announced two years ago, I'll answer the most important question first: Yes, it was worth the wait!

In fact, Gunship may be the best simulation of any type ever created for the C-64. Not only are the sound effects, graphics and animation as good as those on any other aerial combat simulations I've seen, but Gunship's sophisticated targeting system, instrumentation and responsive controls make it the kind of aircraft you'll feel compelled to take up for "just one more mission." Gunship is based on the AH-64A Apache, a heavily armored attack helicopter, often referred to as a flying tank.

Everything about the program looks and feels exactly as you'd expect. As you cruise toward the enemy, your cockpit instrumentation accurately gauges every aspect of the flight. The view from the pilot's seat shows hills, bases and ground forces growing smoothly from small specks on the horizon into reasonably detailed shapes as you pass overhead. When you fire your radar-guided, air-to-ground missiles or folding-fin rockets, the red exhaust flash blasts away with a hiss and settles into a low flight path to the target, where it explodes with a distant rumble. All the while, the unseen rotor blades beat audibly above you.



A view from the cockpit as you pilot your Gunship.

Although the operating manual details everything from weaponry and tactics to flying techniques and advanced maneuvers, beginners needn't feel overwhelmed by the complexity of the simulation. All you need to know to get airborne and to use the weapons and defensive countermeasures is covered in two short tutorials. In addition, the controls are logically arranged along the perimeter of the keyboard, and a template makes finding the right key a snap.

Gunship is a perfect simulation for novices and aerial combat veterans alike, because virtually every parameter of the missions you fly can be customized to your preferences and experience level. For example, you select the part of the world where you'll fly—Central America, Southeast Asia, Western Europe or the Middle East. New pilots can even choose no-risk training duty in the U.S.

You elect to fly a regular, volunteer or hazardous duty mission. You choose realistic or easy flight performances, landings and weather conditions. Finally, you decide whether you'll face first-, second- or third-line enemies. Perhaps the most exciting thing about Gunship is that even when all factors are set the same, no two missions are alike.

No matter what your orders, fulfilling both your primary and secondary missions and returning to your home base in one piece earns you a promotion. If you do exceptionally well, you're even awarded a medal or campaign ribbon.

Unlike other simulations that only give you a place on the "high scores board," Gunship lets you create a pilot and chart his progress from a sergeant in flight school up through the ranks to colonel—if he lives long enough!

Gunship is sufficiently challenging to keep most fighter pilots airborne until MicroProse releases its next blockbuster. *(MicroProse, 120 Lakefront Drive, Hunt Valley, MD 21030. C-64/$34.95.)*

—BOB GUERRA
CHARLESTOWN, MA

THE OFFICIAL AMERICA'S CUP SIMULATION ____ B+

You Won't Need Dramamine on This Yacht, Matey!

For more than a century, the America's Cup was a trophy that only concerned folks with saltwater in their veins. But three years ago, when Dennis Connor became the first American skipper to lose yachting's most prestigious award, the battle between a United States defender and an Australian challenger captured the attention of two continents.

The folks "down under" were so smitten by the whole affair that they even created a computer simulation of the competition. This program gives would-be sailors a chance to suck in the salt air without leaving the comfort of their Commodore keyboards. Be forewarned, however, that it's not really designed for landlubbing gamers; it's a simulation that takes itself seriously.

A glance at the manual makes it clear that the creators don't take their sailing lightly: It provides as much information on 12-meter yacht racing and the Amer- ►

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ica's Cup series as it does on the operation of the program. Those things are crucial to your enjoyment of this program, because even engaging in its simplest version requires you to know something about sailing—if you don't want to end up dead in the water!

I chose to test the waters by competing against the computer, but you can opt to battle a human swabby as well. You set sail on a course that simulates the 24.3-mile America's Cup race, and you compete under International Yacht Racing Union Blue Book rules.

If that doesn't make you seasick, maybe the rigors of command will. The most challenging Command mode for the novice is Set Sail, which requires you to select the type and weight of your yacht's headsail. Your decision should be based on the wind strength and direction, for that determines how quickly your yacht moves through the water. Good sailors will also change headsails often during a race, and each time you do, you'll need to enter the Winching mode.

After learning how to select and hoist your sails, steering your yacht seems like a breeze. In the Helmsman mode, pushing your joystick to the port or starboard side turns your yacht 45 degrees.

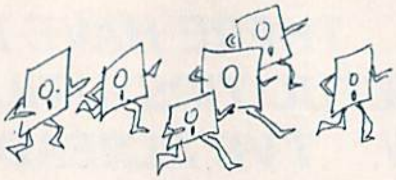
The program contains two information-packed viewing screens. The main screen provides a view from just above the top of your mast and shows both your yacht and the competition. If one of you gets too far ahead to remain in the picture, the screen automatically splits to show both yachts in their respective positions.

Jabbing your fire-button at any time while you're in the Helmsman mode changes the screen into an overhead view of the entire race course. You'll also get the overview automatically every 30 seconds or so, which is particularly useful if you want to see where you are in relation to the competition. In addition, it helps you stay on course in shifting wind conditions.

With either view, an indicator panel for each boat is visible at the bottom corners of the screen, telling you the wind speed and direction, boat speed and direction, direction of the next buoy, current leg of the race and the elapsed time. A changing message screen indicates how far ahead the lead boat is and lists any penalties.

At the end of a race, you have three options: You can start a new race, begin a new seven-race series or review data from the previous race.

The attention to detail the creators invested in this program is amazing. From its glossy, well-illustrated and highly informative manual to its handy command summary card, The Official America's Cup Sailing Simulation shouts anchors aweigh.



The graphics aren't dazzling, but they're adequate for the task at hand, and all the control functions operate smoothly. It certainly appears that this program captures the essence of 12-meter yacht racing as well as anyone has a right to expect a computer program to do.

However, my earlier warning bears repeating: If your greatest interest in the water is the bubbles in your bath, it's highly unlikely this program is for you. Stick to the rubber ducky and leave this sailing simulation to someone with both oars in the water. *(Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. C-64/$24.95.)*

—Scott Wasser
Wilkes-Barre, PA

World Class Leader Board ______ A–

Move Over, Jack and Arnie; We're Coming Through With Our C-64!

It's been interesting to watch the evolution of this golf simulation game from Access Software. It began with Leader Board, which, though advanced at the time, is now more akin to miniature golf. Next came The Executive, an improved Leader Board that offered two new 18-hole courses, trees, roughs and sand traps.

The latest version, World Class Leader Board, is ready for the pro tour. This bag is so full of goodies, it would take two caddies to carry it. Features include a driving range; practice putting green; trees; traps; water; top views of each hole showing the position of balls in play; replicas of three famous courses, plus a fourth designed to be the ultimate test; the ability to pick holes and arrange and store them on disk to make your own course; an editor to select tree types; a printed score card at the end of the round; and the same smooth-swinging golfer with the perfect form.

The three renowned links are Cypress Creek, one of the longest; Doral Country Club, where water hazards abound; and St. Andrews, noted for its double greens and narrow fairways.

The Gauntlet Country Club exists only in the minds of Access programmers. When Jack Nicklaus has nightmares, this must be what the Golden Bear sees in his mind's eye. Sand traps yawn in unexpected places, and streams and lakes border fairways so narrow that golf carts surely must travel them single file.

The accompanying program booklet advises the golfer to develop the timing needed by warming up on the driving range before playing each course. Heed that recommendation, and be sure to master the other three courses before teeing up to run the Gauntlet.

I found the top view feature extremely handy. Each hole is loaded separately from disk, and hash marks every 50 yards along the fairway make it easy to estimate distances.

The create-your-own course feature is nice, too. You can select any of the 72 available holes for your course, but unfortunately, it doesn't provide for major editing changes like the slope of the green or sandtrap placement. The designer can, however, change the style of trees, thereby substantially altering a hole by replacing tall oaks with ground-hugging foliage and making it more difficult to return a stray ball to the fairway.

I have one complaint about this program. Access still clings to the dongle that uses the cassette port for copy-protection. This has both good and bad points. The company permits unlimited backup using the device and even encourages that practice by including a backup disk program. Unfortunately, other Access games and products like Xetec's Fontmaster 128 use dongles. If you have many of these, it becomes difficult to keep track of which goes with what. A misplaced dongle when you're ready to tee off becomes as annoying as a slow foursome that won't let anyone play through.

Access's thoughtful touch to a well-designed program is the scorecard, complete with signature lines for the player, a witness and the caddy to sign. Come to think of it, it must've been the caddy's terrible advice that caused me to triple bogie on the fifth hole. *(Access Software, #A 2561 South 1560 West, Woods Cross, UT 84087. C-64/$39.95.)*

—Lonnie Brown
Lakeland, FL ■

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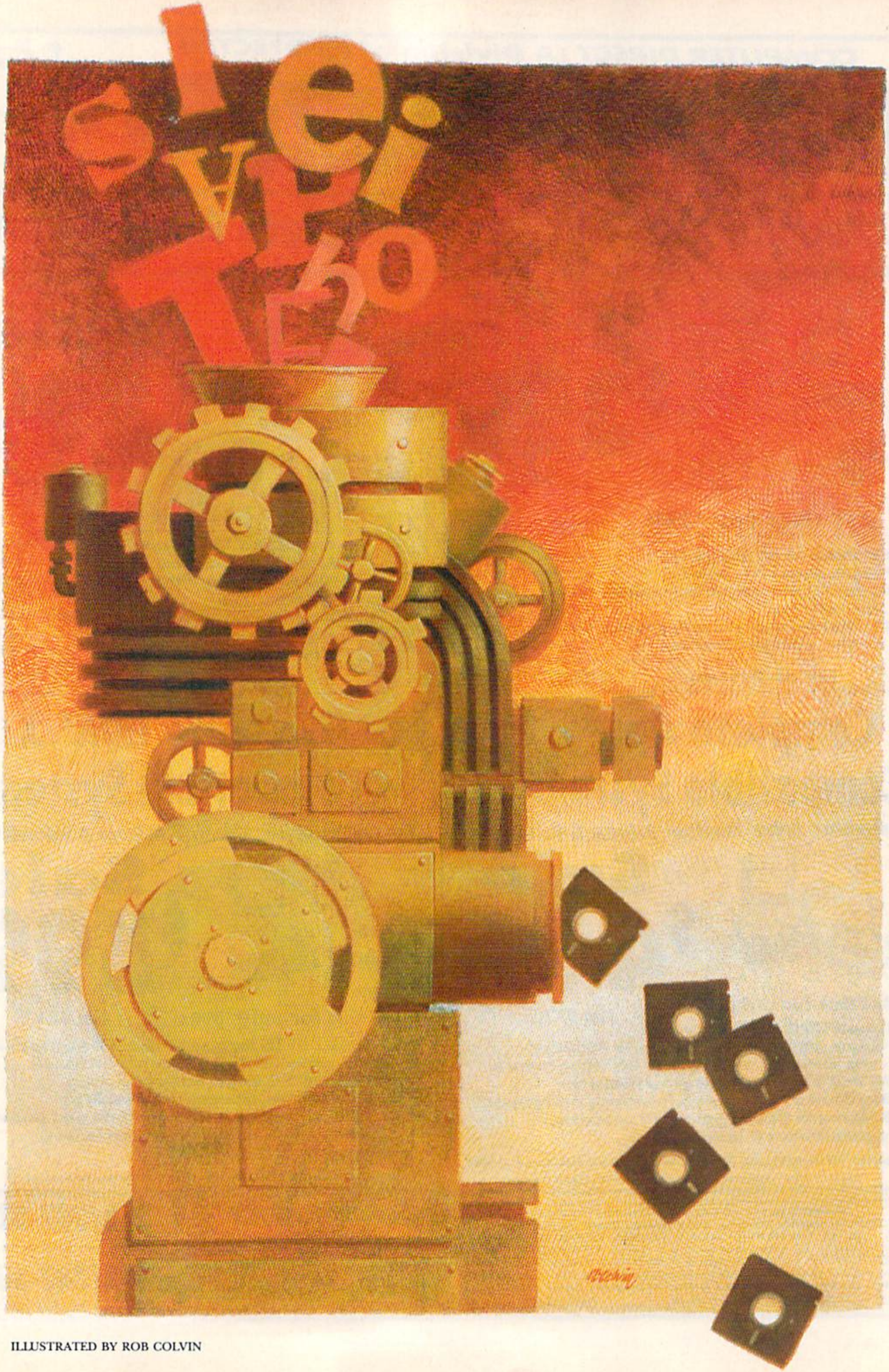


ILLUSTRATED BY ROB COLVIN

What's Write For You?

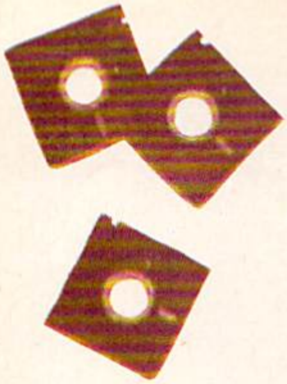
RUN *takes a hard look at seven new-generation word processors. Some offer power and versatility and come in integrated packages.*

By BOB GUERRA

As a result of the growing acceptance of the C-128 and renewed interest in the C-64, many programmers and software developers have been inspired to create a new generation of word processors that offer features and flexibility few would have dreamed possible when the C-64 was first introduced. At the same time, the availability of the mouse, the RAM expansion cartridge, GEOS and programs such as The Print Shop, PrintMaster and The Newsroom is making manufacturers view word processing in a new light.

In many cases, today's word processor is no longer a stand-alone application, but rather an open-ended program that lets you easily integrate database files, spreadsheet data and even graphics into your documents. I have recently put several of these programs through thorough testing and am, on the whole, pleased with what I found.

Here are the advantages, as well as some drawbacks, of seven major word processors on the market today. Five of the seven belong to integrated packages, and the pros and cons of their companion programs are discussed as well. [One of the packages, Activision's Personal Choice Col- ►



lection, was reviewed by another frequent *RUN* contributor, Scott Wasser. —Eds.]

FONTMASTER 128

Excluding geoWrite, perhaps the most graphics-oriented word processing system available is Fontmaster 128 from Xetec. By selecting the Graphics Converter program from the Fontmaster main menu, you can convert The Print Shop, PrintMaster and other hi-res images into a format that can be saved and inserted into your Fontmaster documents when you print. The graphics images you capture can be printed as is, double-width or as negative images that reverse black and white.

To ensure that Fontmaster 128 will work properly with your particular hardware configuration, you can customize the program with the system setup option. This lets you save not one, but two selectable default setups to specify things like screen colors and device numbers, as well as the specific printer/interface combination that will be used.

You can select from over 100 printers and 20 printer interfaces on the setup menu, and, as you flip through the list, you see that each printer is rated for its capability with normal fonts (type styles) and high-resolution super fonts, control and overall performance. In case you're curious, some of the best-rated printers are the Citizen MSP-10; most Epson RX, FX, LX and LQ series printers; the IBM Proprinter and compatibles; the Commodore MPS-1000; the Okidata 192 and 193; the Gemini 10X; and several Star Micronics printers. Those receiving the lowest grades include the Commodore 1525, 801 and 803; the Gorilla Banana; and Epson's Homewriter 10.

As its name implies, Fontmaster lets you use a dot-matrix printer to produce text in a variety of fonts. Forty fonts are included on the program disk and an additional 16 are available on the font supplement disk that comes in the package. They range from useful (news, italic, typewriter, script) to decorative (Bauhaus, Old English, Manhattan, Broadway, shadow) to silly (keys, LED, mirror) to illegible (crossfire, hairpin). There are also a number of foreign language fonts such as Hebrew, Russian, French and German, and a font that can be used to create decorative borders on your documents.

When printing a single document, you can use up to nine different fonts, which must be loaded into "font slots" before you print. Each one can be loaded individually, or you can have the computer automatically load into the proper slots all those required by the current text file. In addition, several text modifiers or embedded commands can be used to change pitch; to select micro, normal or tall characters; or to toggle bold, underlined, italic, compressed and expanded type, as well as super- and subscripts.

Fontmaster 128 even has a number of unique formatting commands that let you print proportional type at any one of four adjustable settings, print entered text from right to left, as required by some foreign languages, print up to four side-by-side text columns and number pages using Roman numerals. These and many other formatting options make Fontmaster an excellent tool for printing text and graphics files easily and creatively.

However, despite the unbelievable array of formatting options, there are a number of reasons why Fontmaster is not a great choice for a primary word processor. First, the command area at the top of the screen contains so much more information than is required for simple text entry that it can be confusing.

Second, while Fontmaster includes most of the text-editing functions of other word processors, words don't wrap automatically in the Edit mode, there's no option for spell-checking your text and there are no specific commands for using the Commodore 1700 or 1750 expansion cartridge as a RAM disk. Therefore, you might want to consider using Fontmaster to prepare documents for printing that you've created with another word processor. This is easy to do because of a main-menu option that lets you convert sequential and standard text files from 12 popular word processors, including PaperClip, Word Pro 3 Plus, Word Writer 128 and Fleet System 2.

FLEET SYSTEM 4

Professional Software's Fleet System for the C-128 has reached version number 4 these days, and this latest update is better than ever. The first change is in the way the program looks. No longer are words arbitrarily broken at the end of a line in the Edit mode. Now, words that are too long to fit at the end of one line are automatically wrapped to the next, making text in the Edit mode easier to read. When you want to see how your text will look on the printed page, you can still output the file to the screen. Now, however, bold and underlined text is displayed as such.

Another new feature lets you save, as default settings, your printer configuration, secondary address, linefeed option and screen colors, and then temporarily change or adjust these settings from within the program by accessing a convenient Default Values menu. In addition, settings for margins, page length and pitch can be saved to the program disk, using the Default menu. If necessary, these settings are easily overridden with on-screen formatting commands.

While Fleet System has always been an easy word processor for beginners to learn, on-screen Help menus now make it easier than ever. Two keystrokes is all it takes to call up on-screen assistance in a dozen specific areas, including formatting commands, cursor movement, search and replace functions and control characters. While the Help menus leave less room for the "extra text" area, advanced users can elect to pass up the on-screen help to gain several text lines in this area of the screen.

Fleet System 4 still has one of the best spelling checkers available, but now they've added an integrated thesaurus with both synonyms and antonyms. To use it, you just put the thesaurus disk in the drive, press F1 and shift/A for antonyms or shift/S for synonyms and then press the up-arrow key to bring the word at the cursor position to the command line.

When you hit the return key, the program looks for a match on the thesaurus disk, and, if it finds one, a window appears containing a number of synonyms or antonyms for the original word. Move the highlight onto a suitable replacement and hit return once again, and the new word automatically replaces the old. Since Fleet System 4 is compatible with the 1700 and 1750 RAM expanders, both the dictionary and thesaurus files can be loaded into memory for really fast access.

Fleet System 4 also comes with Fleet Filer, an easy-to-use integrated data management system that lets you create databases containing up to 5000 records that can be quickly searched, sorted and updated. Fleet Filer also lets you use basic math and logical functions in your database and print your data using the built-in report generator. Because the two programs come in the same package and are made to work together, the Fleet System/Fleet Filer combination is one of the best packages available for anyone wanting to merge database files with word-processed documents.

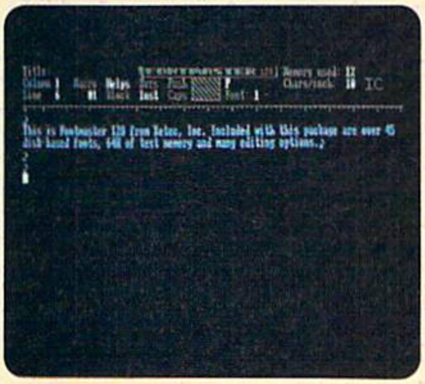
POCKET 2 SERIES

Another approach to integration has been taken by Digital Solutions, makers of the Pocket Writer 2 word processor, the Pocket Filer 2 data management system and the Pocket Planner 2 spreadsheet. These three packages can be used independently, or files created with one can be used with the others. For example, you can easily merge data from a Pocket Filer database with a Pocket Writer text file to create "personalized" form letters.

You can also load numeric data from the same database into the cells of a Pocket Planner spreadsheet for use in calculations and "what if" projections. It's even possible to incorporate graphs and tables created with Pocket Planner into your Pocket Writer documents and load entire spreadsheets into the word processor for on-screen editing.

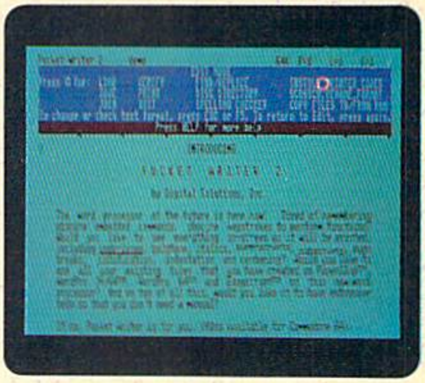
Of course, the ability to integrate database and spreadsheet files with your word-processed documents is of little use if your word processor lacks essential features or is difficult to use. Fortunately, this isn't the case with Pocket Writer 2. Besides the usual cursor movement, block function, editing and formatting commands available with most word processors, Pocket Writer 2 includes a few special features I've seen nowhere else. For instance, it lets you sort lists of words or numbers alphabetically or numerically in either ascending or descending order and instantly transpose letters, words, sentences and even entire paragraphs with just a couple of keystrokes. You can also change a block of text from uppercase to lowercase and back without retyping, and, most amazing of all, you can display either 25 standard or 50 half-height text lines on-screen at once in the C-128 80-Column mode. At 50 lines per screen there is some flickering with certain character/background-color combinations, but, in general, the 50-line text is very readable.

All three Pocket packages work in this 50-line mode. In addition, all three feature extensive on-screen help, support the Commodore RAM expansion cartridges and can be keyboard- or mouse-driven, using pull-down menus. What really makes the Pocket series a great value, how- ►



This is Fontmaster 128 from Xetec, Inc. Included with this package are over 45 disk based fonts, 64K of text memory and many editing options.

As the name implies, you have your choice of fonts with Xetec's Fontmaster 128.



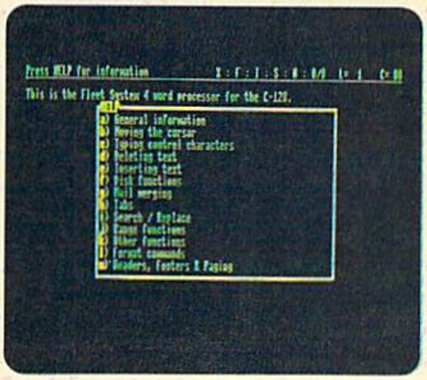
Press HELP for more help

INTRODUCING

POCKET WRITER 2

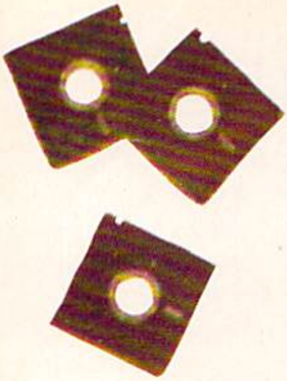
by Digital Solutions, Inc.

Demo screen from Digital Solutions' Pocket Writer 2.



```
Press HELP for information
This is the Fleet System 4 word processor for the C-128.
HELP
a) General information
b) Moving the cursor
c) Typing control characters
d) Deleting text
e) Inserting text
f) Disk functions
g) Mail merging
h) Tabs
i) Search / Replace
j) Range functions
k) Other functions
l) Format commands
m) Headers, Footers & Paging
```

Menu screen from PSI's Fleet System 4.



ever, is that each disk features an 80-column C-128 version of the programs on one side and a C-64 version on the other. The C-64 versions of Pocket Writer and Pocket Planner let you display in the usual 40 columns or in 80 half-width columns on a standard monitor like the 1702. Although the 80-column display is perfectly legible, several of the programs' features work only in the 40-Column mode.

TRIO 128

For those of you who like your integrated software even more closely integrated, there's Trio 128 by Softsync. Trio combines a word processor, spreadsheet and data management system on a single floppy. Now, I know what you're saying. Any package that tries to combine three powerful applications on one disk probably doesn't do anything exceptionally well, right? Right.

Unfortunately, all three Trio programs include only the basic features that serve as a starting point for many of the more powerful programs. For example, while Trio Word lets you move, copy and delete blocks of text, search for and replace specific strings and format and print your completed documents, there's no way to spell-check your text, no provision for using a RAM disk, no automatic word counting and no print preview. Also, there are no predefined printer files, and all instructions for underlining, bold, italic, and so forth, must be stored as ASCII codes with your text.

Similarly, although Trio Calc lets you use all the standard math operators and even Basic logical operators and functions (such as sin, cos, tan, AND, OR, etc.) in your formulas, there are no specialized financial analysis functions, nor even an abbreviated way to get the minimum, maximum or average value of a range of cells. What's more, Trio Calc provides no option for printing large spreadsheets sideways and has no graphics capabilities whatsoever.

When you first boot Trio File, you may think you've accidentally loaded Trio Calc, instead. It appears almost identical on-screen, and your databases must conform structurally to the spreadsheet's column and row format. Trio File's major weaknesses, however, are its limited sort and search capabilities. Specifically, you can't sort on more than one field at a time or search using more than one criterion.

The irony is that this Trio of programs doesn't even integrate well. Sure, you can merge data from Trio File and Trio Calc with Trio Write documents, but there's no way to move data from Trio File to Trio Calc. This problem, along with the package's several other limitations, make Trio one of the weakest integrated systems I've seen for the C-128.

EASY WORKING SOFTWARE

Another disappointing entry in the world of integrated software is the recently released Easy Working series from Spinnaker. The three programs that make up this series—The Writer, The Filer and The Planner—are all written for the C-64 and designed for "the first time user." Believe it or not, each carries a suggested retail price of only $9.95. However, although The Filer and The Planner are reasonably good values, The Writer proves that you often get what you pay for.

The Writer's main problem is in the way it accepts keystrokes. Although things usually start out fine, after you've entered about a screenful of text, the cursor begins to slow noticeably and soon has a difficult time keeping up with your fingers. Even if you're not the world's fastest typist, you can quickly fill the C-64's ten-character keystroke buffer and some subsequent characters may fail to reach the screen.

Another problem is that the cursor and delete keys tend to repeat unless released quickly. This impedes accurate cursor movement and the deletion of just a single character.

Despite the problems with text entry, The Writer has a few features you wouldn't normally expect in a $10 word processor. They include a print-preview mode and a 100,000-word dictionary on the flip side of the program disk.

Information from both The Filer data management system and The Planner spreadsheet program can be incorporated into your documents, and these two packages can be used together for spreadsheet-type analysis of your database records.

One problem I had with all three of the Easy Working packages is that, while they feature on-screen help, the written documentation that accompanies them is printed in small type on both sides of a difficult-to-use 5 × 20-inch strip of paper that's folded into quarters. To make matters worse, instructions for using the Apple and IBM versions of the program are interspersed with those for the C-64. This makes learning to use the programs more difficult than necessary and, coupled with the problems mentioned above, makes Spinnaker's first attempts at productivity software not as "easy working" as their name implies.

WORD WRITER 3

A much better choice for the C-64 owner who's looking for a first word processor is Word Writer 3 from Timeworks. At $49.95, Word Writer is priced $40 higher than The Writer, but for that money you get a GEOS-compatible word processor that's packed with extra features like an 80-Column print-preview mode, a built-in calculator, an integrated thesaurus with over 60,000 synonyms and an 85,000-word spelling checker that lets you create your own subdictionaries. An added bonus is an outline mode that can help you organize your notes and ideas for term papers and other types of reports. Word Writer 3 also lets you integrate data from Timeworks' Data Manager and Swiftcalc programs, and it comes with a thoroughly indexed, 126-page user's manual that takes you step by step through the package's many features.

You access most of Word Writer's editing functions by pressing either the control key or the Commodore key combined with a key from the top row of the keyboard. Instead of on-screen help, Timeworks has provided keyboard overlays that list the specific functions of both the regular and function keys.

Since this program offers nearly every feature of some of the C-128 word processors, such as Fleet System 4, it makes the main difference between C-64 and C-128 word processing the speed with which tasks can be accomplished. For example, using Word Writer 3 to spell-check the Gettysburg Address (approximately 270 words) took me over seven minutes, while Fleet System 4 checked the same document in less than one minute. Similarly, when I used the thesaurus disks of both systems to find synonyms for the word "group," Word Writer took 55 seconds to complete the search, while Fleet System took only five. It's interesting to note, however, that Word Writer found 67 synonyms, compared with only 40 for Fleet System 4, though Fleet System's synonyms are presented in a more clearly organized format.

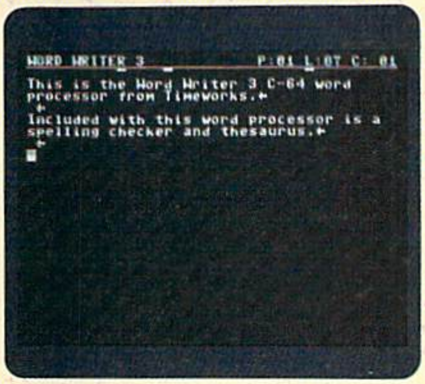
Surprisingly, an outline mode is a feature found in few word processing systems for either the C-64 or C-128, so this is a definite plus for Word Writer 3. After entering the outline mode, you just tab to one of five outline levels, press Commodore/I to index the level and then enter a main topic, subtopic, heading, subheading, and so forth. The computer labels main topics with Roman numerals, subtopics with uppercase letters and subsequent levels with arabic numerals and lowercase letters. As you work on your outline, you can easily add or delete topics or shift their levels, and then re-index the entire outline with just a couple of keystrokes.

The only minor complaint I have with this outliner is that you can't move in and out of the outline mode from within a document. Documents in progress must be saved first; then you must create the outline as a separate document and, finally, merge the two into polished prose.

PERSONAL CHOICE COLLECTION

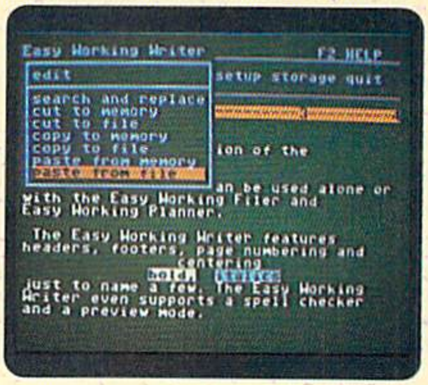
Activision's Personal Choice Collection for the C-64 and C-128, which includes the Writer's Choice word processor, Filer's Choice database and Planner's Choice spreadsheet, is a well-integrated package that takes full advantage of the C-128's capabilities and performs almost as well on the C-64. The instruction manuals are easy to follow and nicely organized, with a step-by-step tutorial section at the beginning, a detailed reference guide and a quick-reference command summary guide for each program. Unfortunately, the programs are incompatible with the IBM emulation mode of Commodore's MPS-1000 printer and its many print features, and the manuals are short on background material. For instance, it would be very helpful to know how many pages the word processor can handle at the same time and how many records the filing program is capable of storing on one disk.

Each Personal Choice program has its own advantages and, in some cases, disadvantages. The word processor, Writer's Choice, is relatively easy to learn and features powerful functions, such as search and replace, text justification and centering, special typefaces, page numbering and block functions. It also comes complete with a 50,000-word spelling checker that you can supplement with your own dictionary, and it displays a graphic preview of what your document will look like before you print it. Writer's Choice also deserves high marks for its use of color to dif- ►



```
WORD WRITER 3                  P:01 L:07 C: 01
This is the Word Writer 3 C-64 word
processor from Timeworks.←
 ←
Included with this word processor is a
spelling checker and thesaurus.←
 ←
█
```

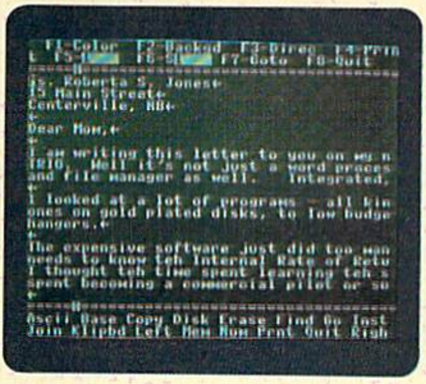
Word processing with Word Writer 3 from Timeworks.



```
ion of the
an be used alone or
with the Easy Working Filer and
Easy Working Planner.

 The Easy Working Writer features
headers, footers, page numbering and
                centering
              bold   italics
just to name a few. The Easy Working
Writer even supports a spell checker
and a preview mode.
```

Edit screen from Spinnaker's Easy Working Writer.



F1-Color F2-Backgd F3-Direc F4-Prin
t F5-I F6-S F7-Goto F8-Quit
Ascii Base Copy Disk Erase Find Go Inst
Join Klipbd Left Mem Mom Prnt Quit Righ

```
Ms. Roberta S. Jones←
15 Main Street←
Centerville, NB←
←
Dear Mom,←
←
I am writing this letter to you on my n
TRIO. Well it's not just a word proces
and file manager as well.  Integrated,
←
I looked at a lot of programs — all kin
ones on gold plated disks, to low budge
hangers.←
←
The expensive software just did too man
needs to know teh Internal Rate of Retu
I thought teh time spent learning teh s
spent becoming a commercial pilot or so
←
```

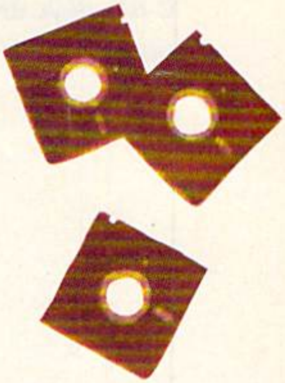
Letter created with Softsync's Trio Write.

Table 1. The latest word processors and their features.

	Fontmaster 128	Fleet System 4	Trio 128	Pocket 2 Series	Personal Choice Collection	Word Writer 3	Easy Working Series
Word Wrap	N	Y	Y	Y	Y	Y	Y
Spell checker	N	Y	N	Y	Y	Y	Y
Thesaurus	N	Y	N	N	N	Y	N
Text Justification	Y	Y	Y	Y	Y	Y	Y
Copy Protection	N[1]	Y	Y	Y	Y	N	N
Upgrade Policy	Y	Y	Y	Y	N	Y	Y
Dictionary	N	Y	N	Y	Y	Y	Y
Telecommunications Capability	Y	Y	N	Y	N	Y	N
Ability to Insert Graphics Into Text	Y	N	N	Y	N	N	N
Special Features	Y	Y	N	Y	Y	Y	Y
40/80/120+ Column (for on-screen editing)	80	80/120	80	40/80	40/80	10-250[2]	40
Edit Commands:							
Search & replace	Y	Y	Y	Y	Y	Y	Y
Move	Y	Y	Y	Y	Y	Y	Y
Copy	Y	Y	Y	Y	Y	Y	Y
Memory Capacity (approximate)	30 pages[3]	30 pages[3]	30 pages[3]	30 pages[3]	600 40-col. lines 500 80-col. lines	10 pages[3]	10 pages
Takes Advantage of:							
RAM Expander	N	Y	N	Y	N	N/A	N/A
1571 Burst Mode	Y	N	N	Y	N	N/A	N/A
1351 Mouse	N	N	N	Y	N	N	N
Printer Features:							
Creates fonts	Y	N	N	N	Y	N	N
Super/subscripts	Y	Y	Y[4]	Y	Y	Y[4]	Y[4]
Underlining	Y	Y	Y[4]	Y	Y	Y[4]	Y[4]
Spreadsheet/Database Integration	N	Y	Y	Y	Y	Y	Y

Fleet System 4
Font Master 128
Trio
WORD PROCESSOR
SPREAD SHEET
DATA BASE
Pocket Filer 2
Pocket Planner 2
Pocket Writer 2
Word Writer 3
EasyWorking

1—Need cassette port key.
2—Uses horizontal scrolling for more than 40.
3—Files can be linked to create longer documents.
4—Define as printer codes.



ferentiate between various functions and operations, its built-in Help screens and a menu-driven system that makes the program fairly easy to learn.

One difficulty I had with this program was in remembering all the different keystrokes needed to access its many functions. Equally annoying was the need to swap the data disk for the program disk every time I wanted to access a Help screen.

Planner's Choice is a powerful and flexible spreadsheet program that quickly performs mathematical computations. Its features include windowing, 11 arithmetic and other built-in functions, three built-in financial functions and automatic adjustment when columns or rows are inserted or deleted. Most of the commonly used functions are conveniently displayed on-screen at all times.

The logical operation and plain-English menus of Planner's Choice make it easy to learn, and you can use it to create spreadsheets of up to 255 rows by 255 columns, for a whopping total of more than 65,000 cells. However, the program's greatest strength lies in its flexibility in creating spreadsheets to fit specific needs. All column widths can be easily adjusted, and there are enough arithmetic functions available to satisfy just about anyone.

The major weakness of Planner's Choice is its lack of predesigned spreadsheets you can use as is or adapt to your own needs. You must learn how to design a spreadsheet from scratch before you can really use this program, and, depending on your needs and your experience, that could be a formidable task.

Filer's Choice, the Personal Choice database, is easy to use, powerful and versatile enough to let you create your own forms for information storage. The program allows for up to 99 fields of information per record and an unlimited number of records per file, and each field or record can contain up to 6399 characters.

Because blank spaces within a record don't use up any memory, there's little chance that a field you create may turn out to be too small or too large for your needs. However, if you do find later that your forms don't quite meet your needs, you can change them without rewriting the file. Another appealing characteristic of Filer's Choice is its use of different colors to distinguish different parts of the forms for easy readability.

The program does have what I consider one serious flaw—a lack of a reliable wild-card search. The instruction manual says wild-card searches are possible, but I found that more often than not, the program fails to locate items that fit the search criteria. I discussed this problem with Activision, and, after testing the program themselves, they acknowledged the flaw. They said it shouldn't be difficult to correct, but as of this writing I've received no word that it's been done.

As you can see, today's powerful word processors are far more than computerized typewriters. Still, features like spell checking, outlining, spreadsheet and database integration and merging graphics with text are only tools to help you clearly express your thoughts and ideas on the printed page. It'll be a long time before we see word processors for the C-64 and C-128 that can recognize an inappropriate use of a correctly spelled word or turn poor grammar into polished prose. ■

Bob Guerra is a professional writer and seasoned computer user, with numerous articles in computer publications to his credit.

Table 2. Manufacturers and prices.

Activision, Inc.
2350 Bayshore Parkway
Mountain View, CA 94043
Personal Choice Collection: Writer's Choice, Filer's Choice, Planner's Choice
$39.95 each; $99.95 package

Digital Solutions, Inc.
2-30 Wertheim Court
Richmond Hill, Ontario
Canada L4B 1B9
Pocket 2 Series: Pocket Writer 2, Pocket Filer 2, Pocket Planner 2
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Spinnaker Software
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Cambridge, MA 02139
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$9.95 each

Timeworks
444 Lake Cook Rd.
Deerfield, IL 60015
Word Writer 3
$49.95

Xetec, Inc.
2804 Arnold Rd.
Salina, KS 67401
Fontmaster 128
$59.95

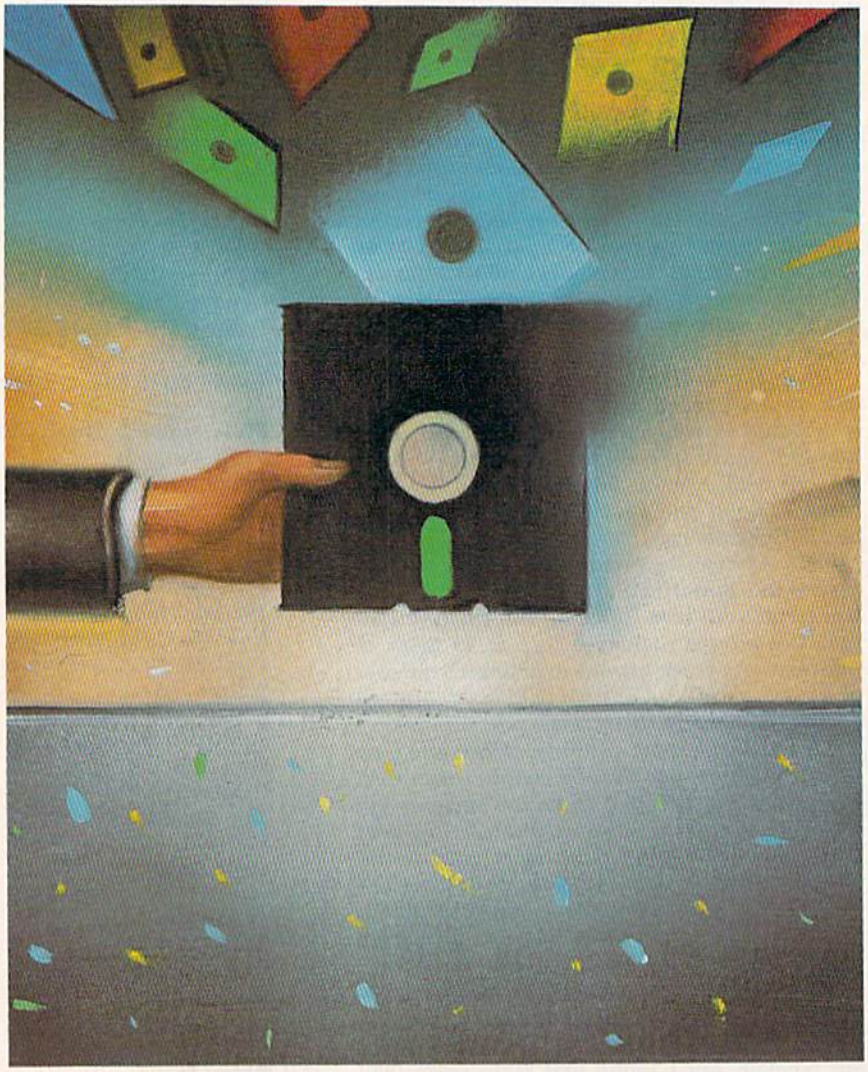
RUN it right:
C-64; disk drive; printer

DFClone

Now you can easily organize files made with Datafile 3.6.

◆

By MIKE KONSHAK



Most users of the Datafile 3.6 database program, published in *RUN* in February 1987, will eventually want to alter the structure of a record file so they can use it for a new purpose. The February article mentioned that files created with Datafile 3.6 could be modified with the DFRestructure program *RUN* published in November of 1985. However, DFRestructure was designed to work with the original version of Datafile, and it has proven ineffective with Datafile 3.6, so I've written a new program, called DFClone, to take its place.

DFClone lets you create a new structure for a Datafile file, then choose the record data to be cloned—or duplicated—into it. You copy only those fields you need for your new file.

The program options are:

1. Copy all or part of an existing record file into a new record file that has the same structure (that is, number, lengths and names of fields).

2. Copy all or part of an existing record file into a new record file having a different structure (that is, different fields, field lengths, names and order).

As an example of the flexibility the second option offers, you could clone the records from a file having only six fields into a new file with 10 fields, or vice versa. This option also lets you combine up to three fields into one and specify the positions of the new fields.

The following logical operators tell DFClone which records to transfer:

=	Field data equals search criteria
>	Field data is greater than search criteria
<	Field data is less than search criteria
<>	Field data is not equal to search criteria
??	Field data partially matches search criteria

You can search up to three operators, fields and criteria (data items) to ensure that only the data you want gets transferred. AND and OR operations can be used within criteria to make a search more selective.

Let's look at a file of students in an elementary school. The file contains each student's name, grade (1–6) and latest test score (0–5, with A = 5 and F = 0).

1	NAME	Bill, Mary, etc.
2	SEX	M or F
3	GRADE	1–6
4	SCORE	0–5

Using DFClone, you can, for exam-►

ILLUSTRATED BY CARY HENRIE

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Circle 187 on Reader Service card.

ple, search fields 2, 3 and 4 to find all the boys in grades 5 and 6 who got A (5) on their last test. Here's the search input for this case:

Search Field	Operator	Data (Criteria)	Continue?
2 (Sex)	=	M	AND
3 (Grade)	>	4	AND
4 (Score)	=	5	END

The search input for finding all the third-grade girls whose last names begin with K–R is:

Search Field	Operator	Data (Criteria)	Continue?
1 (Name)	>	J	AND
1 (Name)	<	S	AND
3 (Grade)	=	3	END

DFClone can divide up a file that exceeds memory capacity. For example, suppose your club's membership list has grown to where it fills its file, and still more new members are anticipated. You could provide for the additional growth by dividing the file into several new files with the same structure, but dedicated to separate groupings of members, such as these:

Old File	New Files
MEMBERS	MEMBERS A–J, MEMBERS K–M, MEMBERS N–R, MEMBERS S–Z
COMP CLUB	CLUB C-64, CLUB C-128, CLUB AMIGA, CLUB PC
AUTHORS	FICTION, NONFICT, MYSTERY, SCI-FI, HISTORY

DFClone can extract fields for use in creating documents such as mailing labels. Say each addressee's first and last name, house number and street, city, state and zip code need to appear on the mailing label, in the three usual lines, and your mailing list record file contains eight fields. You need to transfer all the records in the file and fit them into three fields. Here's a comparison of the old and new files:

Old Structure #Field	New Structure # Field
1 LAST (Name)	1 NAME
2 FIRST (Name)	2 STREETBOX
3 CODE	3 CITYSTATE
4 STREETBOX	
5 CITY	
6 STATE	
7 ZIP	
8 PHONE	

In the new structure, Field 1 contains old fields 2 and 1 (first and last name), Field 2 is old #4, and Field 3 covers old fields 5, 6 and 7. After defining the structure, you can transfer all the records or just those found to have certain data in common. Not every field moves to the new file, but you can use the fields in the old file to search for the records you need.

THE CLONING PROCEDURE

Type in Listing 1, using 64 Perfect Typist, and save it to disk. Next, type in Listing 2 and save it to disk. Listing 2 lets you copy DOS 5.1 from your 1541 or 1571 Test Demo disk onto your DFClone disk. Then run Listing 1, and, after some introductory material, this prompt will appear:

```
PRESS CONTINUE, $ DIRECTORY OR
  QUIT
```

Pressing the $ key displays the disk directory, Q quits the program and C proceeds with cloning. If you press C, the following sequence of screens will appear. First:

```
  CLONE DATAFILE RECORD FILE

INSERT A DISK CONTAINING THE
DATAFILE RECORD FILE TO BE
CLONED. PRESS RETURN WITHOUT
ANY ENTRY TO EXIT.

NAME OF DATAFILE ? MAIL LIST
  <return>
```

The last line asks you to enter the name of the file you want to use as the source for cloning—our mailing list file, for example. After you type the filename, MAIL LIST, and press return, the program loads the structure of the file and then displays:

```
FIELD NAME(LENGTH) FOR MAIL LIST

1 LAST 15            5 CITY 23
2 FIRST 10           6 STATE 2
3 CODE 5             7 ZIP 5
4 STREETBOX 32       8 PHONE 12
192 RECORDS POSSIBLE IN OLD FILE
4 RECORDS CURRENTLY PRESENT

CREATE NEW FILE:
CLONE STRUCTURE AS ABOVE?
  YES NO EXIT
```

If you press Y, DFClone accepts the structure of this file as the structure for the new file as well. The program then advances to a screen that says TRANSFER RECORD DATA TO NEW FILE. You can choose to move all records or to find just certain ones to move. I'll elaborate on this option later.

If you press E, the prompt you encountered at the beginning of the program reappears, giving you a chance to change your source file or quit.

Press N if you want to create a new structure with some of the fields from the Mail List source file. For example, let's use the following format to create a special file for sending form letters to any part of the world:

#	Field Name	Content	Length
1	NAME	First, Last	32
2	STREETBOX	Street or Box	32
3	CITYSTATE	City, State, Zip	32
4	COUNTRY	Country	16

The new file includes most of the Mail List fields, plus the addressee's country. Now that you've defined the new file structure, examine the original screen again. (Remember, you pressed N.)

```
FIELD NAME(LENGTH) FOR MAIL LIST

1 LAST 15            5 CITY 23
2 FIRST 10           6 STATE 2
3 CODE 5             7 ZIP 5
4 STREETBOX 32       8 PHONE 12

NUMBER OF FIELDS PER RECORD? 4
  <return>

FIELD#1
TITLE ? NAME <return>
LENGTH ? 32 <return>
```

As the prompts appear, set up the initial structure for the new file by entering the field title and length you defined previously for fields 2–4. Then the following screen will appear:

```
YOUR SELECTION WILL ALLOW:

205 RECORDS IN A C-64 COMPUTER
468 RECORDS IN A C-128 COMPUTER

PRESS REJECT OR ACCEPT 1 C-64
  2 C-128
```

If you're dissatisfied with the new structure and want to redefine it, press R. To accept the structure as it is, choose either C-64 by pressing 1 or C-128 by pressing 2. Of course, since we're using C-64 files, you should press 1. The old file-structure data will appear again, along with:

```
UP TO THREE OF THE OLD FIELDS
MAY BE COMBINED INTO ONE OF THE
NEW FIELDS.

ENTER FIELDS TO BE CLONED INTO
NEW FILE AS PROMPTED. ENTER 0 TO
LEAVE NEW FIELD EMPTY.

NEW FIELD 1      NAME
OLD FIELD 1 ? 2 <return> etc.
          2 ? 1
          3 ? 0

NEW FIELD 2      STREETBOX
OLD FIELD 1 ? 4
          2 ? 0
          3 ? 0
```

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```
NEW FIELD 3      CITYSTATE
OLD FIELD 1 ? 5
          2 ? 6
          3 ? 7
NEW FIELD 4      COUNTRY
OLD FIELD 1 ? 0
          2 ? 0
          3 ? 0
```

Note that, to leave the record field blank, you must enter 0s for the new fields.

Once you've entered all the data as shown, specifying which fields are to be combined and their proper placement, the program will ask:

```
IS THIS THE INTENDED CLONE? Y N
NEW FILE        OLD FILE
1 NAME          = [FIRST] [LAST]
2 STREETBOX     = [STREETBOX]
3 CITYSTATE     = [CITY] [STATE] [ZIP]
4 COUNTRY       =
```

If everything's all right, press Y to continue. If there's an error, press N. When you press Y, the transferring process starts, with the following screen:

```
TRANSFER RECORD DATA TO NEW
  FILE
CLONE ALL THE RECORDS FROM
  MAIL LIST
FIND RECORDS WITH COMMON DATA
EXIT
PRESS THE APPROPRIATE KEY
```

Pressing E sends you back to the beginning of the cloning process, A transfers every record in the Mail List file into the new file and F moves to the search routines, so you can choose field, data or search criteria and operators.

If you press F, the program presents a breakdown of the old file structure and prompts you for the first search field. Then a sequence of prompts appears, asking specifically what data you're looking for. Naturally, you may have to experiment somewhat to get the results you want.

The only logical operator that might confuse you is ??. It represents the same Find parameter that's used in other Datafile 3.6 programs, and it transfers all records in which the field you've specified begins with the characters you've specified. For instance, if the characters are S-M-I-T-H, all records beginning with SMITH will be moved.

As I mentioned earlier, DFClone can divide a file full of records into several smaller files. If you have two or more files filled with data, you can even divide each into smaller files, then sort all the smaller files together.

When you're working with DFClone, make sure the number of records in your new file doesn't exceed the number of possible records in your original file structure. Also keep in mind that DFClone uses arrays and memory similar to those that Datafile 3.6 uses, so you must be careful in cloning merged files. You could get an Out of Memory error. R

Mike Konshak is the author of the powerful and popular Datafile series of programs.

Listing 1. DFClone program.

```
2 IFFL=0THENFL=1:LOAD"DP] DOS5.
  1",8,1                 :REM*142
3 IFFL=1THENFL=2:SYS52224:FL=0
                         :REM*161
5 REM DATAFILE UTILITY PROGRAM
  DFCLONE 1.2A(C)1986 BY MIKE K
  ONSHAK                 :REM*211
10 POKE53280,7:POKE53281,0:PRIN
   T"{CTRL 8}":GOTO55   :REM*210
15 REM--GET              :REM*237
20 GETA$:IFA$=""THEN20  :REM*160
25 RETURN                :REM*83
30 REM--DISK ERROR       :REM*12
35 INPUT#15,EN,EM$,ET,ES:IF(EN<
   20)OR(EN=62)THENET=0:RETURN
                         :REM*201
40 PRINT"{CRSR DN} {CTRL 9}{COM
   D 3}DISK ERROR{CTRL 0}"EN"{C
   RSR LF}, "EM$","ET"{CRSR LF}
   ,"ES"{CTRL 8}":ET=8 :REM*246
45 PRINT"{CRSR DN} PRESS {CTRL
   9}ANY KEY{CTRL 0} TO RETURN
   TO MENU":GOSUB20:CLOSE5:CLOS
   E15:RETURN            :REM*183
50 REM--START MENU       :REM*180
55 CLR:PRINT"{CTRL 8}{SHFT CLR}
    {CTRL 9}{3 SPACEs}DCLONE PR
   OGRAM{2 SPACEs}V1.2A{2 SPACE
   s}"                   :REM*113
60 PRINT"{CRSR DN}{COMD 6} THIS
    PROGRAM WILL COPY THE STRUC
   TURE"                 :REM*160
65 PRINT" AND RECORD DATA OF FI
   LES CREATED BY"       :REM*239
70 PRINT" THE {CTRL 8}{CTRL 9}D
   ATAFILE{CTRL 0}{COMD 6} DATA
   BASE MANAGEMENT"       :REM*88
75 PRINT" SYSTEM, WRITTEN BY MI
   KE KONSHAK."            :REM*7
80 PRINT"{CRSR DN} THE FOLLOWIN
   G OPTIONS ARE POSSIBLE:"
                         :REM*160
85 PRINT"{CRSR DN} * COPY ALL O
   R PART OF THE EXISTING"
                         :REM*209
90 PRINT" FILE AS IS INTO A NEW
    FILE WITH"            :REM*28
95 PRINT" THE SAME STRUCTURE."
                         :REM*123
100 PRINT"{CRSR DN} * COPY ALL
    OR PART OF THE EXISTING"
                         :REM*224
105 PRINT" FILE INTO A NEW FILE
     WITH A NEW"         :REM*187
110 PRINT" STRUCTURE.(# AND NAM
    E OF FIELDS)"          :REM*0
115 PRINT"{CRSR DN} * COPY FILE
     INTO A FORM COMPATIBLE"
                         :REM*215
120 PRINT" WITH DFILE128 BY MIK
    E KONSHAK FOR"       :REM*168
125 PRINT" THE C-128." :REM*227
130 PRINT"{2 CRSR DNs}{COMD 6}
    PRESS {CTRL 9}{CTRL 2}C{COM
    D 6}{CTRL 0}ONTINUE, {CTRL
    9}{CTRL 2}${COMD 6}{CTRL 0}
     {CTRL 9}{CTRL 2}D{CTRL 0}{
    COMD 6}IRECTORY OR {CTRL 9}
    {CTRL 2}Q{COMD 6}{CTRL 0}UI
    T"                    :REM*98
135 GOSUB20:IFA$="Q"THENEND
                         :REM*239
140 IFA$="$"ORA$="4"ORA$="D"THE
    NGOSUB685:GOTO55     :REM*210
145 IFA$="C"THEN475      :REM*219
150 GOTO135               :REM*32
155 REM--PRINT FIELD INFO FOR R
    EFERENCE             :REM*229
160 PRINT"{COMD 6}{SHFT CLR} {C
    TRL 9}FIELD NAME(LENGTH) FO
    R {CTRL 8}"NF$       :REM*210
165 OE=1:IF(F/2)=INT(F/2)THENOE
    =0                    :REM*13
170 OF=INT(F/2):FORI=1TOOF+OE
                         :REM*134
175 PRINT" {CTRL 9}{CTRL 2}"I"{
    COMD 6}{CTRL 0}"F$(I)L%(I);
                         :REM*219
180 IFOE=1THEN190        :REM*138
185 PRINTTAB(19)"{CTRL 9}{CTRL
    2}"I+OF"{COMD 6}{CTRL 0}"F$
    (I+OF)L%(I+OF):GOTO195
                          :REM*63
190 IFI+OF<FTHENPRINTTAB(19)"{C
    TRL 2}{CTRL 9}"I+OF+1"{COMD
     6}{CTRL 0}"F$(I+OF+1)L%(I+
    OF+1)                 :REM*66
195 NEXTI:RETURN         :REM*141
200 PRINT"{CTRL 8}"R"{COMD 6}RE
    CORDS POSSIBLE IN OLD FILE"
                          :REM*54
205 PRINT"{CTRL 8}"X"{COMD 6}RE
    CORDS CURRENTLY PRESENT":RE
    TURN                 :REM*153
210 REM--CHOOSE OPTION :REM*204
215 GOSUB160:GOSUB200:PRINT"{CR
    SR DN} {CTRL 8}{CTRL 9}CREA
    TE NEW FILE:"         :REM*81
220 PRINT"{COMD 6}{CRSR DN}CLON
    E STRUCTURE AS ABOVE? {CTRL
     9}{CTRL 2}Y{COMD 6}{CTRL 0
    }ES {CTRL 9}{CTRL 2}N{COMD
    6}{CTRL 0}O {CTRL 9}{CTRL 2
    }E{COMD 6}{CTRL 0}XIT{CTRL
    8}"                   :REM*80
225 GOSUB20:IFA$="Y"THEN245
                          :REM*69
230 IFA$="N"THEN255      :REM*158
235 IFA$="E"THEN130      :REM*185
240 GOTO225              :REM*114
245 F0=F:FORI=1TOF:F0$(I)=F$(I)
    :L0%(I)=L%(I):ML(I,1)=I:NEX
    TI:GOTO785            :REM*89
250 REM--CREATE NEW FILE
                         :REM*206
255 GOSUB160:PRINT"{COMD 6}{CRS
    R DN} NUMBER OF FIELDS PER
    RECORD{CTRL 8}?"F0 :REM*107
260 PRINT"{CRSR UP}"TAB(28);:IN
    PUTF0:IFF0=0THEN130:REM*235
265 FORI=1TOF0:PRINT"{CRSR DN}
    {COMD 6}{CTRL 9}FIELD#{CTRL
     8}"I                :REM*152
270 PRINT" {COMD 6}{CTRL 9}TITL
    E{CTRL 0}{3 SPACEs}{CTRL 8}
    ? "F0$(I)"{13 SPACEs}"
                         :REM*155
275 PRINT" {COMD 6}{CTRL 9}LENG
    TH{CTRL 0}{2 SPACEs}{CTRL 8
    }?"L0%(I)"{CRSR LF}{6 SPACE
    s}"                  :REM*192
280 PRINT"{2 CRSR UPs}"TAB(9);:
    INPUTF0$(I)           :REM*29
285 PRINTTAB(9);:INPUTL0%(I):IF
    L0%(I)=0THEN215      :REM*232
290 PRINT"{5 CRSR UPs}":NEXTI
                         :REM*121
295 REM--CALCULATE # RECORDS
                         :REM*212
300 M(1)=29293:M(2)=60000:C=0
                         :REM*187
305 C=C+1:IFC=3THEN335 :REM*134
310 RL=0:FORJ=0TOF0       :REM*99
315 RL=RL+L0%(J)          :REM*20
320 NEXTJ                :REM*157
325 RL=RL+3*(F0+1)+5     :REM*128
330 NR(C)=INT((M(C)-12*(F0+1)-2
    100)/RL):GOTO305     :REM*247
335 PRINT"{COMD 6}{SHFT CLR}{CR
    SR DN} YOUR SELECTIONS WILL
     ALLOW:{CRSR DN}{CTRL 8}"
                         :REM*116
340 PRINTNR(1)"{COMD 6}RECORDS
    IN A C-64 COMPUTER{CTRL 8}"
                         :REM*177
345 PRINTNR(2)"{COMD 6}RECORDS
    IN A C-128 COMPUTER"
                         :REM*250
350 PRINT"{CRSR DN} PRESS {CTRL
     9}{CTRL 2}R{COMD 6}{CTRL 0
    }EJECT OR ACCEPT {CTRL 9}{C
    TRL 2}1{COMD 6}{CTRL 0} C64
    {2 SPACEs}{CTRL 9}{CTRL 2}2
    {COMD 6}{CTRL 0} C128{CTRL
    8}"                   :REM*53
355 GOSUB20:IFA$="R"THEN255
                          :REM*16
360 IFA$="1"THENNR=NR(1):GOTO38
    0                     :REM*53
365 IFA$="2"THENNR=NR(2):GOTO38
    0                    :REM*188
370 GOTO355               :REM*45
375 REM--CLONE FIELDS  :REM*236
380 GOSUB160:PRINT"{COMD 6}{CRS
    R DN} UP TO THREE OF THE OL
    D FIELDS MAY BE"      :REM*23
385 PRINT" COMBINED INTO ONE OF
     THE NEW FIELDS."   :REM*176
390 PRINT"{CRSR DN} ENTER FIELD
    S TO BE CLONED INTO NEW"
                         :REM*147
395 PRINT" FILE AS PROMPTED. EN
    TER {CTRL 9}{CTRL 2}0{COMD
    6}{CTRL 0} TO LEAVE"
                         :REM*180
400 PRINT" NEW FIELD EMPTY.{CRS
    R DN}"                :REM*91
405 FORI=1TOF0:FORJ=1TO3
                         :REM*152
410 PRINT" {CTRL 9}{COMD 6}NEW
    FIELD{CTRL 0}{CTRL 8}"I;TAB
    (15)F0$(I)"{10 SPACEs}{CRSR
     DN}"                  :REM*3
415 FORJ=1TO3:PRINT" {COMD 6}{C
    TRL 9}OLD FIELD{CTRL 0}{CTR
    L 8}"J;TAB(12)"? 0{2 CRSR L
    Fs}"ML(I,J)"{2 SPACEs}"
                         :REM*172
420 PRINT"{CRSR UP}"TAB(13);:IN
    PUTML(I,J)           :REM*127
425 PRINT"{2 CRSR UPs}":NEXTJ:P
    RINT"{3 CRSR UPs}":NEXTI
                          :REM*72
430 PRINT"{SHFT CLR} {COMD 6}{C
    TRL 9}IS THIS THE INTENDED
    CLONE?{CTRL 0} {CTRL 9}{CTR
    L 2}Y{CTRL 0} {CTRL 9}N{CTR
    L 0}{CRSR DN}{COMD 6}"
                         :REM*169
435 PRINT" {CTRL 9}{COMD 6}NEW
    FILE{4 SPACEs}{CTRL 0}{4 SP
    ACEs}{CTRL 9}OLD FILE{13 SP
    ACEs}{CTRL 0}{CRSR DN}"
                          :REM*88
440 FORI=1TOF0:PRINT"{CTRL 2}"I
    "{CTRL 8}"F0$(I)TAB(12)"{CO
    MD 6}={COMD 6}";:FORJ=1TO3
                          :REM*75
445 IFML(I,J)<>0THENPRINT"{CTRL
     8}{CTRL 9}"F$(ML(I,J))"{CT
    RL 0} ";:NEXTJ         :REM*8
450 PRINT:NEXTI           :REM*77
455 GOSUB20:IFA$="N"THEN380
                          :REM*16
460 IFA$="Y"THEN785       :REM*53
465 GOTO455              :REM*148
470 REM--OPEN FILE - READ RECOR
    DS                   :REM*233
475 CLR:PRINT"{CTRL 8}{SHFT CLR
    } {CTRL 9}{7 SPACEs}CLONE D
    ATAFILE RECORD FILE{5 SPACE
    s}{CTRL 0}"           :REM*42
480 PRINT"{COMD 6}{CRSR DN} INS
    ERT DISK CONTAINING THE {CT
    RL 8}OLD{COMD 6} DATAFILE"
                          :REM*73
485 PRINT" RECORD FILE TO BE {C
    TRL 8}CLONED{COMD 6}.":PRIN
    T"{CRSR DN} PRESS {CTRL 2}{
    CTRL 9}ANY KEY{COMD 6}":GOS
    UB20                 :REM*184
487 PRINT"{SHFT CLR}{COMD 6}AVA
    ILABLE RECORD FILES ARE:{CT
    RL 8}{CRSR DN}":@"$0:DF]*"
                          :REM*58
490 PRINT"{CRSR DN}{COMD 6}PRES
    S {CTRL 9}{CTRL 2}RETURN{CT
    RL 0}{COMD 6} WITHOUT AN EN
    TRY TO EXIT"         :REM*125
495 INPUT"{CRSR DN} NAME OF DAT
    AFILE {CTRL 8}";NF$:IFNF$="
    "THEN130             :REM*122
500 OPEN15,8,15:OPEN5,8,5,"0:DF
    ] "+NF$+",S,R":GOSUB35:IFET
    =8THEN130            :REM*245
505 IFEN=62THENGOSUB40:GOTO130
                          :REM*54
510 INPUT#5,R,F,X:NR=R:GOSUB35:
    IFET=8THEN130        :REM*175
515 DIM K%(R+1),F$(F+1),L%(F+1)
    ,REC$(R+1,F+1),F0$(31),L0%(
    31),ML(31,4),RC$(31)
                         :REM*125
520 FORN=1TOF:INPUT#5,F$(N),L%(
    N):NEXTN:GOSUB35:IFET=8THEN
    130                  :REM*230
525 FORI=1TOX:PRINT"{CRSR DN} R
    EADING RECORD #";I;"{2 CRSR
     UPs}"               :REM*177
530 FORN=1TOF:INPUT#5,REC$(I,N)
    :NEXTN:NEXTI:PRINT:GOSUB35:
    IFET=8THEN130        :REM*196
535 CLOSE5:CLOSE15:GOTO215
                         :REM*215
540 REM--SAVE CLONED FILE
                         :REM*176
545 CR$=CHR$(13):PRINT"{COMD 6}
    {SHFT CLR} INSERT THE DISK
    TO RECEIVE THE FILE."
                          :REM*13
550 PRINT" ENTER NAME OF {CTRL
    8}NEW{COMD 6} CLONED FILE T
    O BE"                :REM*122
555 PRINT" SAVED (12 CHARACTERS
     MAX). IF THE OLD" :REM*197
560 PRINT" FILE NAME IS CHOSEN,
     THE OLD FILE"       :REM*200
565 PRINT" WILL BE RENAMED WITH
     {CTRL 8}!OLD.{2 CRSR DNs}"
                         :REM*133
570 PRINT"{2 SPACEs}";FF$:INPUT
    "{CRSR UP}";FF$:IFFF$=""THE
    N215                 :REM*192
575 OPEN15,8,15:PRINT#15,"S0:DF
    ] "+LEFT$(FF$,8)+"!OLD"
                          :REM*33
580 GOSUB35:IFET=8THEN215
                         :REM*166
585 PRINT#15,"R0:DF] "+LEFT$(FF
    $,8)+"!OLD=DF] "+FF$:GOSUB3
    5:IFET=8THEN215      :REM*237
590 OPEN5,8,5,"0:DF] "+FF$+",S,
    W":GOSUB35:IFET=8THEN215
                          :REM*14
595 PRINT#5,NR;CR$;F0;CR$;XR
                         :REM*185
600 FORN=1TOF0           :REM*162
605 PRINT#5,F0$(N);CR$;L0%(N)
                           :REM*7
610 NEXTN:               :REM*132
615 GOSUB35:IFET=8THEN215
```

►

DFCLONE

```
                          :REM*201
620 RETURN                :REM*168
625 REM--                 :REM*237
630 PRINT"{CRSR DN} SAVING RECO
    RD #";I;"{2 CRSR UPs}"
                          :REM*122
635 FORN=1TOF0:IFREC$(K%(I),ML(
    N,1))=""THENR$=">":GOTO645
                          :REM*101
640 R$=REC$(K%(I),ML(N,1)):IFML
    (N,2)=0THEN645        :REM*16
641 R$=R$+" "+REC$(K%(I),ML(N,2
    )):IFML(N,3)=0THEN645
                          :REM*79
642 R$=R$+" "+REC$(K%(I),ML(N,3
    ))                    :REM*146
645 PRINT#5,LEFT$(R$,L0%(N))
                          :REM*125
650 NEXTN:GOSUB35:IFET=8THEN215
                          :REM*162
655 RETURN                :REM*203
660 REM--                 :REM*16
665 CLOSE5:CLOSE15        :REM*101
670 PRINT"{SHFT CLR}RECORD FILE
    S ON DISK ARE NOW:{CRSR DN}
    {CTRL 8}":@"$0:DF]*":REM*40
675 PRINTTAB(25)"PRESS {CTRL 9}
    {CTRL 2}ANY KEY{CTRL 0}{COM
    D 6}":GOSUB20:RETURN
                          :REM*167
680 REM--DIRECTORY        :REM*18
685 PRINT"{SHFT CLR}{CTRL 8}";:
    @"$":PRINTTAB(25)"{COMD 6}P
    RESS {CTRL 9}{CTRL 2}ANY KE
    Y{CTRL 0}{CTRL 8}":GOSUB20:
    RETURN                :REM*245
780 REM--SEARCH RECORDS :REM*21
785 H=0:PRINT"{CTRL 8}{SHFT CLR
    } {CTRL 9}{2 SPACEs}TRANSFE
    R RECORD DATA TO NEW FILE{2
     SPACEs}"             :REM*56
790 PRINT"{CRSR DN}{COMD 6} CLO
    NE {CTRL 9}{CTRL 2}A{COMD 6
    }{CTRL 0}LL THE RECORDS FRO
    M {CTRL 9}{CTRL 8}"NF$
                          :REM*141
795 PRINT"{CRSR DN}{7 SPACEs}{C
    TRL 9}{CTRL 2}F{COMD 6}{CTR
    L 0}IND RECORDS WITH COMMON
     DATA"                :REM*192
798 PRINT"{CRSR DN}{7 SPACEs}{C
    TRL 9}{CTRL 2}D{COMD 6}{CTR
    L 0}IRECTORY {CTRL 9}{CTRL
    2}${CTRL 0}"          :REM*195
799 PRINT"{CRSR DN}{7 SPACEs}{C
    TRL 9}{CTRL 2}V{COMD 6}{CTR
    L 0}IEW A RECORD FILE ON DI
    SK"                   :REM*24
800 PRINT"{CRSR DN}{7 SPACEs}{C
    TRL 9}{CTRL 2}E{COMD 6}{CTR
    L 0}XIT"              :REM*183
805 PRINT"{CRSR DN}{CTRL 8} {CT
    RL 9}{5 SPACEs}PRESS THE AP
    PROPRIATE KEY{6 SPACEs}"
                          :REM*246
810 GOSUB20:IFA$="E"THEN215
                          :REM*111
815 IFA$="A"THEN835       :REM*106
818 IFA$="D"ORA$="$"ORA$="4"THE
    NGOSUB685:GOTO785     :REM*189
819 IFA$="V"THEN1225      :REM*76
820 IFA$="F"THEN855       :REM*3
825 GOTO810               :REM*62
830 REM--CLONE ALL        :REM*227
835 XR=X:GOSUB545         :REM*56
840 FORI=1TOXR:K%(I)=I:GOSUB630
    :NEXTI                :REM*171
845 GOSUB665:GOTO785      :REM*16
850 REM--ENTER SEARCH PARAMETER
    S                     :REM*59
855 GOSUB160              :REM*132
860 H=H+1                 :REM*61
865 PRINT"{CRSR DN} {CTRL 9}{CO
    MD 6}SEARCH FIELD#{CTRL 8}"
    H"{CTRL 0}";:INPUTSF(H)
                          :REM*78
870 IFSF(H)<1ORSF(H)>FTHENPRINT
    "{2 CRSR UPs}";:GOTO865
                          :REM*215
875 PRINT" {COMD 6}{CTRL 9}OPER
    ATOR:{CTRL 0} {CTRL 2}{CTRL
     9} = {CTRL 0} {CTRL 9} > {
    CTRL 0} {CTRL 9} < {CTRL 0}
     {CTRL 9} <> {CTRL 0} {CTRL
     9} ?? {CTRL 0}{CTRL 8} ? =
    {3 CRSR LFs}";:INPUTQ$(H)
                          :REM*134
880 IFQ$(H)="="ORQ$(H)=">"ORQ$(
    H)="<"ORQ$(H)="<>"ORQ$(H)="
    ??"THEN890            :REM*81
885 PRINT"{CRSR UP}";:GOTO875
                          :REM*186
890 PRINT" {COMD 6}{CTRL 9}DATA
    {CTRL 0} {CTRL 8}";:INPUTSF
    $(H):IFH=3THENOP$(3)="END":
    GOTO920               :REM*73
895 PRINT" {CTRL 9}{CTRL 2}AND{
    COMD 6}{CTRL 0}, {CTRL 9}{C
    TRL 2}OR {COMD 6}{CTRL 0},
    {CTRL 2}{CTRL 9}END{CTRL 8}
    {CTRL 0} ? END{5 CRSR LFs}"
    ;:INPUTOP$(H)         :REM*64
900 IFOP$(H)="END"THEN920
                          :REM*79
905 IFOP$(H)="AND"OROP$(H)="OR"
    THEN855               :REM*182
910 PRINT"{CRSR UP}";:GOTO895
                          :REM*219
915 REM--BEGIN SEARCH   :REM*254
920 PRINT"{SHFT CLR} SEARCHING
    FOR...{CRSR DN}"      :REM*219
925 FORJ=1TOH:PRINTJ": "F$(SF(J
    ))" "Q$(J)" "SF$(J)" "OP$(J
    ):NEXTJ               :REM*10
930 PRINT"{2 CRSR DNs}":XR=0:FO
    RI=1TOX:PRINT"{CRSR UP}"I:F
    ORJ=1TOH:Q(J)=0       :REM*59
935 REM--COMPARE DATA   :REM*110
940 IFQ$(J)="="ANDREC$(I,SF(J))
    =SF$(J)THEN970        :REM*71
945 IFQ$(J)=">"ANDREC$(I,SF(J))
    >SF$(J)THEN970        :REM*76
950 IFQ$(J)="<"ANDREC$(I,SF(J))
    <SF$(J)THEN970        :REM*81
955 IFQ$(J)="<>"ANDREC$(I,SF(J)
    )<>SF$(J)THEN970      :REM*126
960 IFQ$(J)="??"ANDSF$(J)=LEFT$
    (REC$(I,SF(J)),LEN(SF$(J)))
    THEN970               :REM*77
965 NEXTJ:GOTO980         :REM*148
970 Q(J)=1:GOTO965:REM{2 SPACEs
    }SET QUERY TRUE       :REM*127
975 REM--DETERMINE LOGICAL OPER
    ATORS-                :REM*212
980 IFOP$(1)="AND"ANDOP$(2)="AN
    D"THEN1030            :REM*219
985 IFOP$(1)="AND"ANDOP$(2)="OR
    "THEN1040             :REM*98
990 IFOP$(1)="OR"ANDOP$(2)="AND
    "THEN1050             :REM*59
995 IFOP$(1)="OR"ANDOP$(2)="OR"
    THEN1060              :REM*192
1000 IFOP$(1)="AND"THEN1070
                          :REM*153
1005 IFOP$(1)="OR"THEN1080
                          :REM*162
1010 REM--FINAL TEST      :REM*199
1015 IFQ(1)THEN1025       :REM*124
1020 NEXTI:GOTO1095       :REM*49
1025 XR=XR+1:K%(XR)=I:GOTO1020
                          :REM*5
1030 IFQ(1)ANDQ(2)ANDQ(3)THEN10
     25                   :REM*146
1035 GOTO1020             :REM*21
1040 IFQ(1)AND(Q(2)ORQ(3))THEN1
     025                  :REM*74
1045 GOTO1020             :REM*31
1050 IFQ(1)OR(Q(2)ANDQ(3))THEN1
     025                  :REM*180
1055 GOTO1020             :REM*41
1060 IFQ(1)ORQ(2)ORQ(3)THEN1025
                          :REM*66
1065 GOTO1020             :REM*51
1070 IFQ(1)ANDQ(2)THEN1025
                          :REM*100
1075 GOTO1020             :REM*61
1080 IFQ(1)ORQ(2)THEN1025
                          :REM*238
1085 GOTO1020             :REM*71
1090 REM--WRITE RECORDS FOUND I
     N SEARCH             :REM*106
1095 GOSUB545             :REM*21
1100 FORI=1TOXR:GOSUB630:NEXTI
                          :REM*74
1105 GOSUB665:GOTO785     :REM*21
1110 REM--SCAN FILE ON DISK
                          :REM*34
1225 PRINT"{SHFT CLR} {CTRL 9}
     FAST SCAN OF RECORDS IN DF
     ILE64 FILE"          :REM*63
1230 PRINT"{CRSR DN}{COMD 6} IN
     SERT DISK CONTAINING RECOR
     D FILE IN"           :REM*204
1235 PRINT" DRIVE. PRESS {CTRL
     9}{CTRL 2}ANY KEY{COMD 6}"
     :GOSUB20:FF$=""      :REM*81
1240 PRINT"{SHFT CLR}{COMD 6}AV
     AILABLE RECORD FILES ARE:{
     CTRL 8}{CRSR DN}":@"$0:DF]
     *"                   :REM*46
1245 PRINT"{3 CRSR DNs}{COMD 6}
      NAME OF RECORD FILE{CTRL
     8}";:INPUTFF$:IFFF$=""THEN
     785                  :REM*1
1250 OPEN15,8,15:OPEN5,8,5,"0:D
     F] "+FF$+",S,R":GOSUB35:IF
     ET=8THEN785          :REM*202
1255 IFEN=62THENGOSUB40:GOTO785
                          :REM*49
1260 INPUT#5,R2,F2,X2:GOSUB35
```

```
                          :REM*22
1270 PRINT"{COMD 6}{SHFT CLR} F
     ILE {CTRL 8}"FF$"{COMD 6}
     HAS{CTRL 8}"F2"{COMD 6}FIE
     LDS AND"             :REM*44
1275 PRINT" CURRENTLY HOLDS{CTR
     L 8}"X2"{COMD 6}RECORDS"
                          :REM*93
1295 PRINT"{SHFT CLR} POSITIONI
     NG...{CTRL 8}"       :REM*60
1300 FORN=1TOF2:INPUT#5,RC$(0),
     RC$(0):NEXTN:GOSUB35:IFET=
     8THEN785             :REM*95
1305 FORI=1TOX2:PRINT"{CRSR DN}
     {CTRL 9}{COMD 6}RECORD #{C
     TRL 8}"I:FORN=1TOF2:REM*62
1310 INPUT#5,RC$(N):GOSUB35:IFE
     T=8THEN785           :REM*71
1315 PRINT"{CTRL 9}{CTRL 2}"N"{
     CTRL 9}{CTRL 8}"RC$(N):GOS
     UB1340               :REM*36
1320 IFA$="E"THENCLOSE5:CLOSE15
     :PRINT"{COMD 6}{2 HOMEs}":
     GOTO785             :REM*225
1325 NEXTN:NEXTI:CLOSE5:CLOSE15
                         :REM*196
1330 PRINT"{COMD 6} PRESS {CTRL
      2}{CTRL 9}ANY KEY{CTRL 0}
     {COMD 6}":GOSUB20:GOTO785
                         :REM*185
1335 :                    :REM*36
1340 GETA$:IFA$<>""THEN1350
                         :REM*211
1345 RETURN              :REM*128
1350 PRINT"{CRSR DN}{CTRL 9}{CT
     RL 2}ANY KEY{COMD 6}{CTRL
     0} TO CONTINUE OR {CTRL 9}
     {CTRL 2}E{CTRL 0}{COMD 6}X
     IT{CTRL 8}":GOSUB20:RETURN
                         :REM*251
```

Listing 2. DOS 5.1 Installer program.

```
10 REM INSTALLS DOS 5.1 ON DATA
   FILE 3.6 DISKS        :REM*20
20 IFFL>0THEN70         :REM*230
30 PRINT"{COMD 6}{SHFT CLR} INS
   ERT 1541 DEMO DISK OR ANY DI
   SK THAT              :REM*170
40 PRINT"{CRSR DN} CONTAINS {CT
   RL 9}{CTRL 8}DOS 5.1{COMD 6}
   {CTRL 0} IN DISK DRIVE."
                         :REM*76
50 PRINT"{CRSR DN} PRESS {CTRL
   9}{CTRL 2}ANY KEY{CTRL 0}{CO
   MD 6} WHEN READY     :REM*104
60 GOSUB150              :REM*86
70 IFFL=0THENFL=1:LOAD"DOS 5.1"
   ,8,1                 :REM*172
80 IFFL=1THENSYS52224   :REM*246
90 PRINT"{CRSR DN} INSERT DATAF
   ILE DISK IN DRIVE"   :REM*138
100 PRINT"{CRSR DN} PRESS {CTRL
    2}{CTRL 9}ANY KEY{CTRL 0}{
   COMD 6} WHEN READY":REM*242
110 GOSUB150            :REM*136
120 POKE43,255:POKE44,203:POKE4
    5,90:POKE46,207     :REM*244
130 SAVE"DP] DOS5.1",8,1
                        :REM*112
140 POKE43,1:POKE44,8:POKE46,8:
    NEW                  :REM*24
150 GETA$:IFA$=""THEN150:REM*92
160 RETURN              :REM*218
```

■

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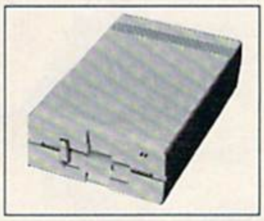

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A Beginner's Tour of CP/M

Using CP/M mode on your 128 isn't as difficult as you might think, and it gives you a wider range of programs to choose from.

◆

By ANNETTE HINSHAW

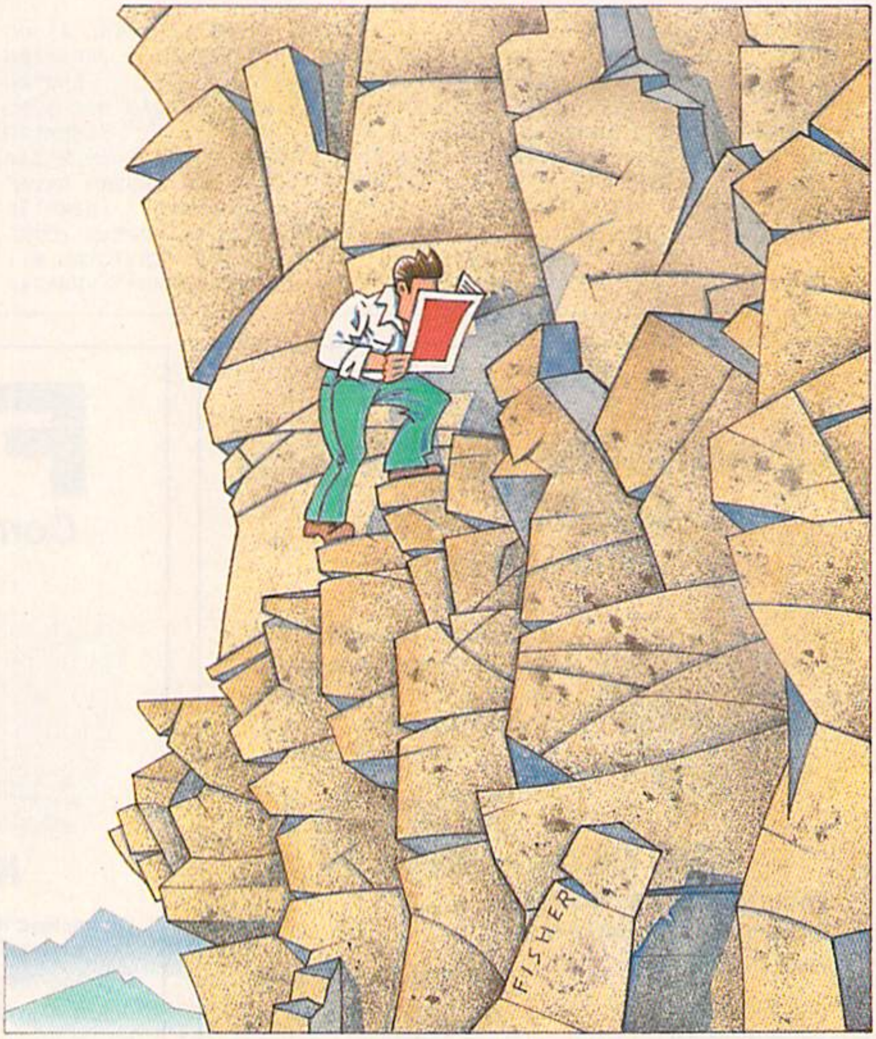
The existence of the enormous library of CP/M (standing for Control Program/Microcomputer) programs is a major reason I bought a C-128. Since I'm an experienced computer user, I expected to learn the new operating system easily. Instead, I ran into so many problems and frustrations that I almost gave up the project.

If you've had a similar experience, this article is for you. Its step-by-step instructions, along with the Help files on the CP/M system disk and some practice, will let you dip into CP/M without tearing your hair or buying more hardware and books. The trick is to learn only what you need to know for the next step, thus building up your knowledge gradually.

You don't have to buy an 80-column monitor or replace your trusty 1541 disk drive for this exploration. You can decide later whether the lure of the CP/M library of software is worth further investment in hardware, software and time.

My biggest problem in learning to use CP/M was finding specifics on the Commodore implementation. Commodore CP/M is a version of CP/M 3.0 (also known as CP/M Plus), which is, in turn, a version of CP/M developed specifically for banked memory systems.

Commodore CP/M has a few special qualities not found in other CP/Ms, with the result that it's almost, but not quite, what general books and articles on CP/M describe. The differences are enough to confuse not only new CP/M users, but also those who are experienced with other CP/M systems.



The CP/M chapter in the *C-128 System Guide* indicates that for more information on CP/M 3.0, you can order the user's guide from Digital Research, the producer of CP/M. It doesn't mention, however, that this official manual describes a standard implementation of the operating system, so, as a Commodore user, you'll get no special benefit from it. Even in those aspects where Commodore CP/M is the same as other versions, this document won't be of much help to you as a beginner. It's massive, poorly indexed and designed mostly for programmers. Fortunately, the Help files that come with 128 CP/M are extensive and specific to the Commodore system.

A Note on Hardware

If the only monitor you have is 40-column, you face a special frustration with CP/M, because all CP/M screens are displayed in 80 columns. On the 40-column screen, you *can* use the control ►

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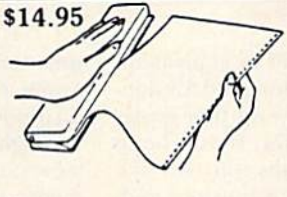

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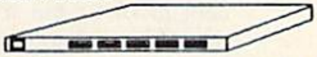

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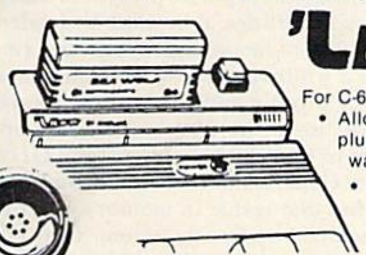

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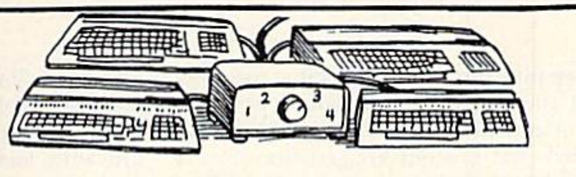

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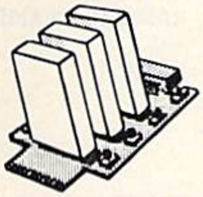

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key plus the right- and left-arrow keys at the top of the keyboard to scroll horizontally past the 40th column and back, but this quickly gets tiresome. If you're planning to get an 80-column monitor to use with 128 mode anyway, consider waiting until then to tackle CP/M in earnest.

A 1541 disk drive won't hold up your beginning explorations. However, just as with the monitor, if you like CP/M and expect to become more involved with it, you'll want a 1571 or equivalent. Most CP/M software is designed for double-sided drives, so boot-up time is significantly less on a 1571. If you hope to use major applications software like dBaseII, you may want to consider multiple drives as well.

When in Doubt, Read the Instructions

The first step in learning any new computer application is to read the documentation. Chapter IV of the *C-128 System Guide* is devoted to a brief description of CP/M on the 128. Skim through sections 11–14 to get an overview. (Section 15, on keyboard enhancements, can wait until later.) Also study the table on mode changes on page 13 of the guide.

Table 1. Help files of particular use to the CP/M beginner.

- C128 CP/M
- C128 CP/M COMMAND LINE
- C128 CP/M DISK STATUS
- C128 CP/M KEYBRD DEFS
- C128 CP/M KEYBRD DEFS ALPHNUM KEYS
- C128 CP/M KEYBRD DEFS ARROW KEYS
- C128 CP/M KEYBRD DEFS EXTRA KEYS
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- FILESPEC
- HELP
- PIP
- PIP EXAMPLES
- PIP OPTIONS
- SHOW
- SHOW EXAMPLES
- TYPE
- TYPE EXAMPLES

Table 2. Help files useful for more advanced CP/M operations.

- DEVICE
- DEVICE OPTIONS
- DEVICE EXAMPLES
- DEVICE C128 DEVICES
- ED
- ED COMMANDS
- ED EXAMPLES
- ERASE
- ERASE OPTION
- ERASE EXAMPLES
- KEYFIG
- KEYFIG KEY VALUES
- RENAME
- RENAME EXAMPLES
- SAVE
- USER

Table 3. CP/M line-editing control characters that have Commodore equivalents.

Control Character	Equivalent
Control/A	Shifted right-left cursor key
Control/E	Up-arrow key (top right)
Control/F	Unshifted right-left cursor key
Control/H	Delete key
Control/I	Tab key
Control/J	Return key (essentially equivalent)
Control/M	Return key (essentially equivalent)
Control/Q and Control/S	No-scroll key, toggle
Control/W	Up-down cursor key

Unfortunately, this chapter contains some minor errors and omissions. For example, the section on copying disks says to use the COPYSYS command for dual drives, but this command isn't available in the C-128 implementation. The guide also says that Erase, Rename and Type are built-in commands (resident in DOS), but it doesn't mention that the programs that enable them are hidden on side 2 of the system disk. In addition, nowhere in the documentation does it say that the system disk is formatted for a 1541 drive—as two single-sided disks. A 1571 can't read the directory on the second side unless you flip the disk over.

Nevertheless, poor documentation is better than no documentation. Don't worry if you have trouble understanding everything. Your purpose is to get a feel for how CP/M differs from your Commodore operating system.

Backing Up

The first step to take in exploring CP/M is a practical one—making a backup copy of the system disk that came with your C-128. This is basically an easy task, but, as in many computer operations, there's lots of room for mistakes, and I think I made them all.

What follows is the procedure I eventually learned. Keep in mind as you step through it that the system disk is two-sided. Also, remember that many CP/M commands are separate programs, called transient utilities, that must be loaded from disk to be used. You load and run such a utility by typing its name after the A> prompt and pressing the return key. A list of the transient utilities appears in the CP/M chapter of the *C-128 System Guide*. (There are other "built-in" utilities that reside in memory with the main CP/M operating system. They are listed separately in the guide.)

Here's how to make a backup:

1. With the system disk in the drive, type FORMAT and press the return key. (I've used capital letters for the commands so they'll stand out, but you can use lowercase if you wish.)

2. When the Format program has loaded and the hardware-option display appears, remove the system disk and insert a blank disk.

3. Select the appropriate menu items

for your hardware configuration from the screen display and press return; then press $ when prompted.

4. If you're using a 1571 drive, remove the backup disk from the drive when the formatting is done and insert the system disk again. If you're using a 1541, make a second formatted disk for the backup (because the system disk is two-sided), and number the backup disks for later reference. Then reinsert the system disk.

5. Type PIP and press return.

6. After the PIP program has loaded and run, the screen will display an asterisk. If you have a single-drive system, type:

```
e:=*.*
```

Don't press return until you make sure the system disk is in the drive.

This step sets up a virtual disk drive designated as E and tells the computer you want to copy every file on the system disk to it. The virtual drive is a logical convention in which your single drive becomes, in turn, drive A and drive E. The asterisk wild card works almost as it does in the Commodore operating system.

7. The system disk contains a lot of files, which must be loaded and copied separately. The PIP program will step you through the process, instructing you to swap disks when needed. Just follow the screen prompts, pressing the return key each time you insert a different disk. Remember that disk A is your source disk (the system disk), and disk E is your destination disk (the backup).

Each time a file has been copied, its filename is added to a list on the screen. Large files, like the Help files, take quite a while to copy, and copying all the files may take over half an hour. Don't start this project if you're leaving for the movies in 15 minutes.

Eventually another asterisk will appear, indicating that all the files on the first side of the system disk have been copied. If you have a 1541, flip the system disk over and repeat steps 6 and 7 to copy the utilities from the second side to the second formatted disk. If you have a 1571 and formatted your backup disk as double-sided, flip the original but not your backup, so transient utilities like Erase and Rename will be accessible from a single directory.

8. When you finish the backup, store your original system disk in a safe place, and use the backup instead.

GOING FORWARD

Now that your system disk has been duplicated and safely tucked away, you can really start with your exploration of CP/M. The next logical step is to display, read and possibly print out some of the Help files. They'll give you an idea of the capabilities of this classic operating system.

At the A> prompt, type HELP and press return, and a list of filenames will appear. These are the files in the first level of the Help-file hierarchy. Many of these files subsume other files, called subtopics, and some of these, in turn, subsume further subtopics.

You'll notice that the prompt has changed to HELP> instead of an A>. To exit the Help files and return to the A> prompt, you can press return again—but don't do it yet. Choose a Help file and enter its filename to display it on the screen. Note that the underline character in filenames like C128 CP/M is inserted with the back-arrow key in the upper-left corner of your keyboard.

Once the Help file appears, you'll probably find that it has subtopics. Type the name of a subtopic and press return. You can also go directly from the HELP> prompt to a subtopic by typing the subtopic's name after the topic name. You can go directly to Help files from the A> prompt, too, by typing HELP, followed by the topic name and then the subtopic name.

This raises a problem I had when I was exploring the Help files: I couldn't get subtopics to appear when I tried to access them directly from the HELP> prompt. The instructions in the *C-128 System Guide* say to enter ".subtopic" after the name of the topic, but I discovered that you must separate the subtopic from the topic with a space instead of a period. For example, if the topic is COMMANDS and the subtopic CONVENTIONS, type:

```
HELP>COMMANDS CONVENTIONS
```

or

```
A>HELP COMMANDS CONVENTIONS
```

I recommend that you print out Help files containing information you'll probably be needing, as some of the files are packed with too many details to recall once they scroll off-screen. You can print the files easily because of one of the joys of CP/M—its ability to echo the screen display to the printer. Just press control/P, and everything that's on-screen will also be printed out until you execute another control/P. If you have the sound turned up on your monitor, you'll notice that the control/P is accompanied by a beep to alert you that the print-echo function is on.

Absolutely everything is echoed to the printer, including half a screen of carriage returns above the file text. This scrolling seems to be CP/M's way of clearing the screen, but when control/P is on, it wastes a lot of paper.

I circumvent these carriage returns by using the List option. To activate this option, type LIST in square brackets after the name of the file you want to print. For example:

```
HELP>COMMANDS [LIST]
```

The List option also disables the display hold at the end of each screen of text. Of course, this means you won't be able to catch all the text of files that are more than one screen long. If you want to read all of a long file before you print it out, toggle control/P off, then turn it back on for printing.

I printed out all the Help files, one file to a page, and ended up with a stack of paper over half an inch thick. (A manual form-feed after each file created the separate pages.) However, you won't need all the files, as many describe commands or programming aides you won't use immediately.

As a beginner, you should peruse, either on-screen or in hard copy, the Help files listed in Table 1. Other Help files you'll want to study if you decide to use CP/M seriously are listed in Table 2. The two KEYFIG files in Table 2 apply particularly to the special Commodore keyboard enhancements to CP/M.

My printer had problems reproducing some of the screen characters in the Help files, especially the braces that surround optional parameters for CP/M commands. When I couldn't figure out what a character should be from the printout, I displayed the file on the screen again, and wrote the character on the printout by hand.

There are other Help files I haven't listed in the tables. You might check them, too, for a further idea of the potential of CP/M. For instance, I'm intrigued by the possibility of date-stamping my word processing files or developing a sequence of commands that I can execute by using only one Submit command.

Some of the Help files describe programs that don't come with the system disk. If you order the CP/M manual and extra utilities from Digital Research, you'll acquire LIB, LINK, DUMP, MAC, RMAC, HEXCOM, SID and XREF.

LINE-EDITING CONTROLS

Our third and last exploration is playing with the line-editing control characters that are basic to CP/M operation. ►

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CP/M doesn't permit the full-screen editing we're used to on the Commodore. The right-left cursor key works as usual, but the up-down cursor key doesn't work at all. The insert-delete key deletes when it's both shifted and unshifted, but it won't insert spaces.

There's a list of the CP/M line-editing controls in the CP/M chapter in the *C-128 System Guide* and in the CNTRL-CHARS Help file. My first response to the list was that there are too many to keep straight. However, I soon realized that I could ignore several, because I'd probably never use them or because the Commodore keyboard has single keys already configured for those functions. For instance, control/J and control/M are, for all practical purposes, carriage returns, so I can ignore them and use the return key.

Type something on the screen—whatever comes to mind—and try the control characters, remembering to press the control key at the same time as the character. As you edit, keep in mind that, once you move beyond a line, you can't go back. You may have to try the control characters out of order, because, for instance, control/A won't move the cursor to the right if it's at the end of what you've typed. Use control/B to move to the left margin first.

Read the C128 CP/M COMMAND LINE and KEYBRD DEFS Help files, and make notes of Commodore keys that have the same effect as the CP/M line-editing controls; then try them out. I came up with the equivalents listed in Table 3. Use whichever keys—CP/M or Commodore—that are most comfortable for you.

SAME CASE, DIFFERENT COMPUTER

When you boot CP/M, you literally access a different computer. Its heart is a Z-80 microprocessor chip that behaves differently than the familiar Commodore central processing units, which belong to a different chip family. Some of my first feelings that things weren't going right were probably caused by these unexpected differences.

For example, I've owned at least half-a-dozen Commodore computers and have never had a problem with key bounce (when you hit a key, and it stutters on the screen). The Z-80 tends to add letters you didn't intend. On the other hand, the space bar doesn't seem to repeat when I hold it down in CP/M mode, as it does in 64 or 128 mode.

The CP/M keyboard buffer works differently, also. When I turn on control/P, some characters that activate the printer as I type don't make it to the screen. In fact, many of my commands used to fail because they were missing a letter. I learned not to type until the printer stopped cheeping at me.

I came to love the control/W command (up-down cursor) that repeats the last line on the screen. With control/W, I can edit the line instead of retyping the whole thing when I make a mistake.

Most other differences between the Z-80 and Commodore processing units are minor. The Z-80 is more heat sensitive than the Commodore chips, and it quit talking to me by 10 AM every day in July. I also miss full-screen editing and a clear-screen key, and I learned to be careful about spaces, which are more critical in CP/M mode than in the Commodore operating system.

These differences are not problems, though. I just found it disconcerting to have my familiar computer change its behavior.

WHAT NEXT?

If you've explored through the steps above, you should be over beginner's blues with CP/M mode. You should have a feel for how the system operates and what it can do. Your next step is to decide whether you want to invest more in learning CP/M.

In its favor, many classic computer programs, from Xmodem to WordStar and dBaseII, were originally written for CP/M machines. Hundreds of other CP/M programs, many of them for business or programming applications, are available in the public domain or at modest prices. On the other hand, CP/M doesn't provide color and sound, so it makes games and educational applications seem lacklustre.

If these preliminary explorations of CP/M have excited you, you might do well to find knowledgeable CP/M users, such as owners of Osborne, Kay-Pro and Epson QX-10 computers, or members of a CP/M user's group. Ask them to put their systems through their paces and show you the software that's available for them.

I'm going to continue learning CP/M. I think Commodore computers are exciting and, for the home user, the best computing value available, bar none, in spite of the fact that the mainstream of new ideas and computer power has sometimes bypassed them. CP/M on the C-128 provides a chance to live in both worlds. ■

Annette Hinshaw, founder of the Tulsa Area Commodore Users Group, has written extensively for computer magazines.

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Typing Tachometer 128

How quickly and accurately can you type?
Measure your wpm and improve your typing skills as well.

◆

By CHARLES KERR and DOUG LARSON

"Don't look back; something may be gaining on you," quipped baseball's legendary Satchell Paige. Well, in this case, it's fine to look back, because what's gaining on you is both useful and fun. It's Typette 128, a program that will improve your typing proficiency, make you chuckle and help you memorize 12 witty quotations you can use on your friends.

The quotations appear one at a time at random. After you type each one as rapidly but accurately as possible, the program displays the percentage of the characters you got correct, your speed in words per minute and the number of mistakes you made. It also awards points based on a combination of your accuracy and speed.

To use Typette 128, type in Listing 1, save it to disk and then run it. An attractive screen display will appear, with a quotation from a well-known personality. A rule above the quotation indicates its length in characters.

Type the quotation exactly as you see it, including punctuation, capitalization and character placement. As you type, your input will appear directly below the quotation, in reverse characters. Don't try to correct any errors you make, because we've disabled the editing keys to encourage accuracy.

500
700
400
800
300
900
200
1000

The only way to escape from the quotation screen is to fill out the entire line with characters. If you don't want to type that particular quotation, you can fill the line quickly by repeating any character, but doing so will wreak havoc with your cumulative scores.

Once you've filled the line one way or the other, the program automatically checks for mistakes, then indicates the incorrect characters with little red arrows and displays your scores for that quotation. After you've seen how you did, press the return key to go to the next quotation, F1 to clear your cumulative scores and start over, F3 to view your cumulative scores or F5 to leave the program. Ten quotations make up a complete exercise, but you can press F3 or F5 at any time.

When you press F3, the screen displays your final cumulative scores, a rating chart and a mistake tally. The rating chart is based on ten quotations. The mistake tally lists all the keyboard characters in columns, with the number of times you typed them incorrectly displayed in parallel columns. Numbers for characters you've mistyped five or more times appear in red. After checking your total performance, press F1 to start over or F5 to leave the program.

Typette values accuracy over speed. You'll achieve higher scores by typing slowly and correctly than by typing quickly but incorrectly. Fifty bonus points are added each time you type a quotation perfectly.

Eventually you may want to replace the quotations we've supplied with some that are of your own choosing. Try to select quotations that contain characters you mistype frequently, and be sure the quotations are no more than 79 characters long.

To insert the new quotations in the program, list lines 450–560, move the cursor to where you want the replacements to go and type them in. Make ►

ILLUSTRATED BY KATHERINE MAHONEY

Modem Promotion!!!

The Best Commodore Direct-Connect Modem for ONLY $99.95.

Now that you're able to do all those stand alone applications with your Commodore, like word processing, spread sheet analysis, etc., you are probably thinking "It would sure be nice if I could expand the information I have access to." Everything from Electronic Mail (E-mail) to stock quotes and huge databases of every imaginable type is now on-line just waiting for you to dial up. All you need is a telephone line and a modem connected to your Commodore which allows you to download this information.

Which modem is best for you?" Lets first say that almost all modems (and services) are set up to communicate in one of two speeds; 300 and 1200 Baud. If you look around you will find that there is a flood of 300 baud modems on the market and sometimes at very low prices. The reason is simple, they are being dumped because most computer users prefer 1200 Baud. (1200 Baud is about 4 times as fast which means you spend less time and money getting the data you want and more time using it.) Virtually everyone who has a 300 would rather have a 1200. You will also notice a few very cheap 1200s on the market at "too good to be true prices". They are. Most are cheaply built foreign copies of American designs. The service and support you receive is minimal-to-nonexistent for these models.

Recently we re-evaluated our modem line and discovered that the best price/performance tradeoff for our Commodore customers would be a straightforward, easy-to-use unit with no complicated switch settings or indicators, but one that just did what our customers wanted without complications. To our surprise (and contrary to popular belief), we found that we could build the unit in the USA with better reliability and performance levels than anywhere else. We found that because of a significant increase in reliability that American components and manufacturing give us, we now have the best fail-safe product possible. An unreliable product is not worth the price, however low. Get a modem that will satisfy your present AND future needs by going directly to the American built **Aprotek 12C!**

What do you get for $99.95? Everything! You don't need to worry about cables, compatibility or anything else! We don't just sell hardware, we sell solutions. The Aprotek 12C plugs directly into your Commodore Vic-20, C-64, C-64C or C-128 User port. The 12C is a full feature, 300 and 1200 Baud modem with Auto Answer, Auto Dial, Touch-Tone or rotary dialing, has status indications on screen to let you know what is happening all the time. The 12C comes complete with "COMM TERM 64" a complete communications and terminal program and has a built in speaker so that you can hear it dial and connect. Just plug it into your computer and standard phone jack with the supplied cable. (No additional power supply required.) Also included is a free trial offer subscription to Compuserve, the complete user database.

STILL NOT SURE? Aproteks' reputation as a first rate peripherals supplier and our 5 year warranty on the 12C plus our 2 week satisfaction or your money back guarantee tells you that we support our products.

Do you have more than one computer or do you plan to get another computer? Call or write for other models.

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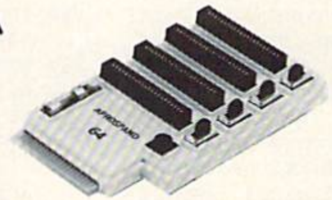

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sure they're enclosed in quotation marks, but that they don't contain any quotation marks. When the replacements are correct, press the return key to fix them in the listing. Finally, save the revised listing to disk, so you don't lose all your work when you turn off the computer. Ⓡ

Charles Kerr is a reading teacher by profession, a hacker by avocation. He conceived the Typette program and did the basic writing, while friend and collaborator Doug Larson, an engineer with industrial programming experience, created the more difficult routines and repaired and polished the rest.

Listing 1. Typette 128 program.

```
10 FAST:DIMS$(12):DIM LI(12):DI
   MMS%(218)             :REM*210
20 M=132:FORZ=1TO2:FORW=ZTO8STE
   P2:M=M+1:KEYW,CHR$(M):NEXT:N
   EXT                   :REM*196
30 CC=0:RT=0:WPM=0:PE=0:RS=0:EC
   =0:FP=O:FR=0:RR=0:RP=0:TY=0:
   FM=0:L$=""            :REM*134
40 FORX=0TO218:MS%(X)=0:NEXT:PR
   INTCHR$(142):FORCO=1TO12:LI(
   CO)=0:NEXT:POKE2592,1:POKE41
   05,0:POKE4104,0:WINDOW0,0,79
   ,24,1:GOTO260         :REM*126
50 GETKEYK$              :REM*192
60 IFK$=CHR$(13)ORK$<CHR$(32)OR
   K$=CHR$(34)OR(K$>CHR$(95)AND
   K$<CHR$(160))THEN50  :REM*128
70 SOUND1,300,1,0,0,0,2,1200:IF
   FL=0THENFL=1:TS=TI   :REM*198
80 PRINT"{CTRL 9}{CTRL 4}";K$;:
   L$=L$+K$:IFLEN(L$)<LEN(S$(NU
   ))THEN50              :REM*162
90 T$=L$:L$="":POKE208,0:TF=TI:
   RS=LEN(S$(NU)):US=LEN(T$):WI
   NDOW33,5,50,5,1:PRINT"{CTRL
   0}{COMD 3}{SHFT C}HECKING...
   .";:WINDOW0,4,79,4:XK$="":FX
   =0                    :REM*104
100 FORDL=1TORS:SK$=MID$(T$,DL,
    1):SL$=MID$(S$(NU),DL,1):IF
    SK$=SL$THENXK$=XK$+" ":CC=C
    C+1:GOTO120:ELSEFX=1:XK$=XK
    $+"{COMD 3}{UP ARROW}"
                          :REM*10
110 MI=ASC(SL$):MS%(MI)=MS%(MI)
    +1                   :REM*240
120 NEXTDL               :REM*104
130 IFFX=1THENPRINTXK$;:ELSEWIN
    DOW33,5,50,5,1:PRINT"{COMD
    3}{SHFT A}LL {SHFT C}ORRECT
     !";:FORX=1TO1000:NEXT
                         :REM*112
140 IFFL=1THENES=(TF-TS)/60:ET=
    INT(ES)               :REM*90
150 WINDOW33,5,50,5,1:TY=RS-CC:
    IFET<1THENET=1       :REM*148
160 IFTY>(US/5)/(ET/60)THENTY=(
    US/5)/(ET/60)        :REM*250
170 WPM=(US/5)/(ET/60)-TY:PE=IN
    T(100*CC/RS):PO=PE*2+WPM:IF
    PE=100THENPO=PO+50  :REM*246
180 RT=RT+PO:RR=RR+WPM:EC=EC+1:
    WINDOW18,9,64,9,1:PRINT"{CT
    RL 0}{CTRL 2}":PRINTUSING"{
    CTRL 2}###";PE;      :REM*232
190 PRINTSPC(8):PRINTUSING"##";
    WPM;:PRINTSPC(6):PRINTUSING
    "##";TY;:PRINTSPC(9):PRINTU
    SING"### ";PO;:PRINTSPC(7):
    PRINTUSING"{COMD 3}####";RT
    ;                    :REM*110
200 RP=RP+PE:FM=FM+TY:CC=0:PE=0
    :PO=0:WPM=0:TY=0:POKE208,0:
    GETKEYC$             :REM*130
210 IFC$=CHR$(13)THENWINDOW18,9
    ,55,9,1:GOTO250      :REM*188
220 IFC$=CHR$(133)THEN30:REM*92
230 IFC$=CHR$(134)THENGOTO620
                           :REM*2
240 IFC$=CHR$(135)THEN1150:ELSE
    200                  :REM*170
250 RETURN                :REM*52
260 PRINTCHR$(142);"{CTRL 9}{CT
    RL 3}{4 SPACEs}5{3 SPACEs}1
    0{3 SPACEs}15{3 SPACEs}20{3
     SPACEs}25{3 SPACEs}30{3 SP
    ACEs}35{3 SPACEs}40{3 SPACE
    s}45{3 SPACEs}50{3 SPACEs}5
    5{3 SPACEs}60{3 SPACEs}65{3
     SPACEs}70{3 SPACEs}75{5 SP
    ACEs}"               :REM*101
270 PRINT"{5 CRSR DNs}{CTRL 3}{
    80 COMD @s}"          :REM*89
280 PRINT"{COMD G}";TAB(79);"{C
    OMD M}"              :REM*149
290 PRINTCHR$(14);"{COMD G} {CO
    MD 3}{SHFT N}UMBER";TAB(17)
    ;"{CTRL 4}{SHFT P}ERCENT{4
    SPACEs}{SHFT W}{SHFT P}{SHF
    T M}{4 SPACEs}{SHFT M}ISTAK
    ES{4 SPACEs}{SHFT P}OINTS{5
     SPACEs}{SHFT T}OTAL";TAB(7
    1);"{COMD 3}{SHFT T}YPETTE
    {CTRL 3}{COMD M}"   :REM*171
300 PRINT"{COMD G}";TAB(73);"{C
    TRL 4}128{CTRL 3}{3 SPACEs}
    {COMD M}"            :REM*235
310 PRINT"{COMD G}";TAB(79);"{C
    OMD M}"              :REM*179
320 PRINT"{80 COMD Ts}":REM*219
330 PRINTCHR$(142);TAB(20);"{CO
    MD 8}{SHFT N}{38 COMD Ts}{S
    HFT M}               :REM*165
340 PRINTTAB(19);"{SHFT N}{40 C
    OMD @s}{SHFT M}      :REM*245
350 PRINTTAB(18);"{SHFT N}{2 SP
    ACEs}{COMD 4}{COMD P}{COMD
    3}{COMD U}{COMD 4}{COMD P}
    {COMD P} {COMD P}{4 SPACEs}
    {COMD P} {COMD P} {COMD P}
    {COMD P}{4 SPACEs}{COMD P}
    {COMD P} {COMD P} {COMD P}{
    2 SPACEs}{COMD P} {COMD P}
    {COMD P} {COMD P}{COMD 8}{2
     SPACEs}{SHFT M}     :REM*137
360 PRINTTAB(17);"{SHFT N}{2 SP
    ACEs}{CTRL 4}{COMD O} {COMD
     O}{SHFT SPACE}{COMD O}{SHF
    T SPACE}{COMD O}{SHFT SPACE
    }{COMD O}{SHFT SPACE}{COMD
    O}{SHFT SPACE}{COMD O}{SHFT
     SPACE}{COMD O}{SHFT SPACE}
    {COMD O}{SHFT SPACE}{COMD O
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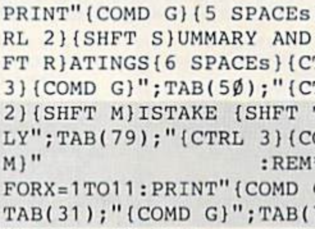
    COMD O}{SHFT SPACE}{COMD O}
    {SHFT SPACE}{COMD O}{SHFT S
    PACE}{COMD O} {SHFT SPACE}{
    COMD O}{SHFT SPACE}{COMD O}
    {SHFT SPACE}{COMD O}{SHFT S
    PACE}{COMD O}{COMD 8}{2 SPA
    CEs}{SHFT M}          :REM*59
370 PRINTTAB(16);"{SHFT N}{2 SP
    ACEs}{CTRL 4}{COMD O}{SHFT
    SPACE}{COMD O}{SHFT SPACE}{
    COMD O}{SHFT SPACE}{COMD O}
    {SHFT SPACE}{COMD O}{SHFT S
    PACE}{COMD O}{SHFT SPACE}{C
    OMD O}{SHFT SPACE}{COMD O}{
    SHFT SPACE}{COMD O}{SHFT SP
    ACE}{COMD O}{SHFT SPACE}{CO
    MD O}{SHFT SPACE}{COMD O}{S
    HFT SPACE}{COMD O}{SHFT SPA
    CE}{COMD O}{SHFT SPACE}{COM
    D O}{SHFT SPACE}{COMD O}{SH
    FT SPACE}{COMD O} {SHFT SPA
    CE}{COMD O}{SHFT SPACE}{COM
    D O}{SHFT SPACE}{COMD O}{SH
    FT SPACE}{COMD O}{COMD 8}{2
     SPACEs}{SHFT M}     :REM*153
380 PRINTTAB(15);"{SHFT N}{2 SP
    ACEs}{CTRL 4}{COMD I} {COMD
     I} {COMD I}{SHFT SPACE}{CO
    MD I}{SHFT SPACE}{COMD I}{S
    HFT SPACE}{COMD I}{SHFT SPA
    CE}{COMD I}{SHFT SPACE}{COM
    D I}{SHFT SPACE}{COMD I}{SH
    FT SPACE}{COMD I}{SHFT SPAC
    E}{COMD I}{SHFT SPACE}{COMD
     I}{SHFT SPACE}{COMD I}{SHF
    T SPACE}{COMD I}{SHFT SPACE
    }{COMD I}{SHFT SPACE}{COMD
    I}{SHFT SPACE}{3 COMD Is} {
    SHFT SPACE}{COMD I}{SHFT SP
    ACE}{COMD I}{SHFT SPACE}{CO
    MD I}{SHFT SPACE}{COMD I}{C
    OMD 8}{2 SPACEs}{SHFT M}
                          :REM*69
390 PRINTTAB(14);"{SHFT N}{2 SP
    ACEs}{CTRL 4}{COMD I}{SHFT
    SPACE}{COMD I}{SHFT SPACE}{
    COMD I}{SHFT SPACE}{COMD I}
    {SHFT SPACE}{COMD I}{SHFT S
    PACE}{COMD I}{SHFT SPACE}{C
    OMD I}{SHFT SPACE}{COMD I}{
    SHFT SPACE}{COMD I}{SHFT SP
    ACE}{COMD I}{SHFT SPACE}{CO
    MD I}{SHFT SPACE}{COMD I}{S
    HFT SPACE}{COMD I}{SHFT SPA
    CE}{COMD I}{SHFT SPACE}{COM
    D I}{SHFT SPACE}{COMD I}{SH
    FT SPACE}{COMD I}{SHFT SPAC
    E}{COMD I}{SHFT SPACE}{COMD
     I} {SHFT SPACE}{3 COMD Is}
    {SHFT SPACE}{COMD I}{SHFT S
    PACE}{COMD I}{COMD 8}{2 SPA
    CEs}{SHFT M}          :REM*149
400 PRINTTAB(13);"{SHFT N}{11 S
    PACEs}{21 COMD Is}{20 SPACE
    s}{SHFT M}            :REM*237
410 PRINTTAB(12);"{SHFT N}{54 S
    PACEs}{SHFT M}        :REM*143
420 PRINTTAB(11);" {56 COMD Ts}
                          :REM*173
430 PRINT"{CTRL 3}{80 COMD Ts}"
                           :REM*45
440 PRINTCHR$(14);" {CTRL 2}{SH
    FT F}1{2 SPACEs}{COMD 4}{SH
    FT S}TART {SHFT O}VER";TAB(
    21);"{CTRL 2}{SHFT F}3{2 SP
    ACEs}{COMD 4}{SHFT F}INAL {
    SHFT S}CORE";TAB(43);"{CTRL
     2}{SHFT F}5{2 SPACEs}{COMD
     4}{SHFT E}ND";TAB(58);"{CT
    RL 2}{SHFT R}{SHFT E}{SHFT
    T}{SHFT U}{SHFT R}{SHFT N}{
    2 SPACEs}{COMD 4}{SHFT N}EX
    T {SHFT E}XERCISE ":REM*135
450 S$(1)="{SHFT S}HE RAN THE G
    AMUT OF EMOTIONS FROM {SHFT
     A} TO {SHFT B}.{2 SPACEs}{
    SHFT D}OROTHY {SHFT P}ARKER
    "                      :REM*97
460 S$(2)="{SHFT W}INE MAKES A
    MAN MISTAKE WORDS FOR THOUG
    HTS.{2 SPACEs}{SHFT S}AMUEL
     {SHFT J}OHNSON"       :REM*49
470 S$(3)="{SHFT T}AVERNS ARE P
    LACES WHERE MADNESS IS SOLD
     BY THE BOTTLE.{2 SPACEs}{S
    HFT J}ONATHAN {SHFT S}WIFT"
                          :REM*201
480 S$(4)="{SHFT D}ON'T LOOK BA
    CK.{2 SPACEs}{SHFT S}OMETHI
    NG MAY BE GAINING ON YOU.{2
     SPACEs}{SHFT S}ATCHEL {SHF
    T P}AIGE"             :REM*169
490 S$(5)="{SHFT A} FISHING ROD
     HAS A HOOK AT ONE END AND
    A FOOL AT THE OTHER.{2 SPAC
    Es}{SHFT S}AMUEL {SHFT J}OH
    NSON"                 :REM*243
500 S$(6)="{SHFT W}HEN IN {SHFT
     R}OME, DO AS THE {SHFT R}O
    UMANIANS DO.{2 SPACEs}{SHFT
     T}HE {SHFT F}ONZ"  :REM*23
510 S$(7)="{SHFT T}HE FACK CAN'
    T BE NO LONGER DISGISED THA
    T A {SHFT K}RYSIS IS ONTO U
    S.{2 SPACEs}{SHFT A}RTEMUS
    {SHFT W}ARD"           :REM*85
520 S$(8)="{SHFT I} WAS BORN MO
    DEST; NOT ALL OVER, BUT IN
    SPOTS.{2 SPACEs}{SHFT M}ARK
     {SHFT T}WAIN"        :REM*200
530 S$(9)="{SHFT I} NEVER FORGE
    T A FACE BUT IN YOUR CASE {
    SHFT I}'LL MAKE AN EXCEPTIO
    N.{2 SPACEs}{SHFT G}ROUCHO
    {SHFT M}ARX"           :REM*52
540 S$(10)="{SHFT L}IFE ISN'T A
    LL BEER AND SKITTLES.{2 SPA
    CEs}{SHFT T}HOMAS {SHFT H}U
    GHES"                  :REM*92
550 S$(11)="{SHFT A}LWAYS DO RI
    GHT; THIS WILL GRATIFY SOME
     PEOPLE AND ASTONISH THE RE
    ST.{2 SPACEs}{SHFT M}. {SHF
    T T}WAIN"             :REM*218
560 S$(12)="{SHFT L}IFE IS A PR
    EDICAMENT WHICH PRECEDES DE
    ATH.{2 SPACEs}{SHFT H}ENRY
    {SHFT J}AMES"         :REM*190
570 FOREN=1TO10           :REM*214
580 NU=INT(RND(0)*10)+1:IFLI(NU
    )=1THEN580             :REM*72
590 LI(NU)=1:PRINTCHR$(14);:WIN
    DOW4,9,8,9,1:PRINT"{CTRL 0}
    {CTRL 4}";EN;         :REM*192
600 S=54272:POKES+24,25:POKES+1
    ,110:POKES+5,9:POKES+6,9:PO
    KES+4,17:POKES+4,16  :REM*8
610 WINDOW0,2,79,4,1:PRINT"{CTR
    L 0}{CTRL 2}";S$(NU):POKE20
    8,0:FL=0:GOSUB50:NEXTEN
                          :REM*114
620 IFLEN(L$)>0THENT$=L$:GOSUB9
    0                      :REM*48
630 IFEC=0THENEC=1         :REM*90
640 WINDOW0,0,79,24,1:FP=RP/EC:
    FR=RR/EC              :REM*116
650 PRINTCHR$(14);"{CTRL 3}{80
    COMD @s}"             :REM*124
660 PRINT"{COMD G}";TAB(31);"{C
    OMD G}";TAB(79);"{CTRL 3}{C
    OMD M}"               :REM*146
670 PRINT"{COMD G}{5 SPACEs}{CT
    RL 2}{SHFT S}UMMARY AND {SH
    FT R}ATINGS{6 SPACEs}{CTRL
    3}{COMD G}";TAB(50);"{CTRL
    2}{SHFT M}ISTAKE {SHFT T}AL
    LY";TAB(79);"{CTRL 3}{COMD
    M}"                   :REM*244
680 FORX=1TO11:PRINT"{COMD G}";
    TAB(31);"{COMD G}";TAB(79);
    "{COMD M}":NEXT       :REM*102
690 PRINTCHR$(142);"{COMD G}{29
     COMD Ts} {COMD G}";TAB(79)
    ;"{COMD M}"           :REM*140
700 PRINT"{COMD G}";TAB(7);"{CO
    MD 8}{SHFT U}{16 SHFT *s}{S
    HFT I}";TAB(31);"{CTRL 3}{C
    OMD G}";TAB(79);"{COMD M}"
                          :REM*208
710 PRINTCHR$(14);"{COMD G}";TA
    B(7);"{COMD 8}{SHFT -} {CTR
    L 9}{COMD 4}{2 SPACEs}{SHFT
     T}YPETTE 128 {CTRL 0} {COM
    D 8}{SHFT -}";TAB(31);"{CTR
    L 3}{COMD G}";TAB(79);"{COM
    D M}"                 :REM*134
720 PRINT"{COMD G}";TAB(7);"{CO
    MD 8}{SHFT -} {CTRL 9}{CTRL
     4}{14 SPACEs}{CTRL 0} {COM
    D 8}{SHFT -}";TAB(31);"{CTR
    L 3}{COMD G}";TAB(79);"{COM
    D M}"                 :REM*204
730 PRINT"{COMD G}";TAB(7);"{CO
    MD 8}{SHFT -} {CTRL 9}{COMD
     4}{2 SPACEs}{SHFT F}1 - {S
    HFT S}TART{2 SPACEs}{CTRL 0
    } {COMD 8}{SHFT -}";TAB(31)
    ;"{CTRL 3}{COMD G}";TAB(79)
    ;"{COMD M}"           :REM*206
740 PRINT"{COMD G}";TAB(7);"{CO
    MD 8}{SHFT -} {CTRL 9}{CTRL
     4}{14 SPACEs}{CTRL 0} {COM
    D 8}{SHFT -}";TAB(31);"{CTR
    L 3}{COMD G}";TAB(79);"{COM
    D M}"                 :REM*224
750 PRINT"{COMD G}";TAB(7);"{CO
    MD 8}{SHFT -} {CTRL 9}{COMD
     4}{2 SPACEs}{SHFT F}5 - {S
    HFT E}ND{4 SPACEs}{CTRL 0}
    {COMD 8}{SHFT -}";TAB(31);"
    {CTRL 3}{COMD G}";TAB(79);"
    {COMD M}"              :REM*64
760 PRINTCHR$(142);"{COMD G}";T
    AB(7);"{COMD 8}{SHFT J}{16
    SHFT *s}{SHFT K}";TAB(31);"
    {CTRL 3}{COMD G}";TAB(79);"
    {COMD M}"             :REM*114
770 PRINT"{COMD G}";TAB(8);"{CO
    MD 8}{10 COMD Us}{SHFT E}{C
    OMD U}{SHFT E}{COMD U}{SHFT
     E}{COMD U}";TAB(31);"{CTRL
     3}{COMD G}";TAB(79);"{COMD
     M}"                  :REM*193
780 PRINT"{CTRL 3}{80 COMD Ts}"
                          :REM*141
790 WINDOW3,4,30,8,1:IFFP>99AND
    FP<100THENFP=99       :REM*115
800 PRINTCHR$(14);"{CTRL 4}{SHF
    T F}INAL {SHFT S}CORE{5 SPA
    CEs}{CTRL 2}-";:PRINTUSING"
    {COMD 3} #### ";RT  :REM*93
810 PRINT"{COMD 4}{SHFT F}INAL
    {SHFT P}ERCENT{3 SPACEs}{CT
    RL 2}-";:PRINTUSING"{COMD 3
    }{2 SPACEs}### ";FP :REM*23
```

►



tamar

TYPING TACHOMETER 128

```
820 PRINT"{CTRL 4}{SHFT A}VERAG
    E {SHFT W}{SHFT P}{SHFT M}{
    5 SPACEs}{CTRL 2}-";:PRINTU
    SING"{COMD 3}{3 SPACEs}## "
    ;FR                :REM*105
830 PRINT"{COMD 4}{SHFT T}OTAL
    {SHFT M}ISTAKES{2 SPACEs}{C
    TRL 2}-";:PRINTUSING"{COMD
    3}{2 SPACEs}### ";FM;:WINDO
    W3,9,30,13,1       :REM*151
840 IFRT>2750THENPRINTCHR$(15);
    "{CTRL 2}2750 AND {UP ARROW
    }{3 SPACEs}:{2 SPACEs}{COMD
     4}{SHFT E}XCELLENT{COMD 8}
    ":GOTO870           :REM*71
850 PRINT"{CTRL 2}2750 AND {UP
    ARROW}{3 SPACEs}:{2 SPACEs}
    {COMD 4}{SHFT E}XCELLENT{CO
    MD 8}"               :REM*5
860 IFRT<2750ANDRT>2499THENPRIN
    TCHR$(15);"{COMD 4}2500 - 2
    749{2 SPACEs}:{2 SPACEs}{CT
    RL 2}{SHFT V}ERY {SHFT G}OO
    D{COMD 8}":GOTO890 :REM*159
870 PRINT"{COMD 4}2500 - 2749{2
     SPACEs}:{2 SPACEs}{CTRL 2}
    {SHFT V}ERY {SHFT G}OOD{COM
    D 8}"              :REM*199
880 IFRT<2500ANDRT>2249THENPRIN
    TCHR$(15);"{CTRL 2}2250 - 2
    499{2 SPACEs}:{2 SPACEs}{CO
    MD 4}{SHFT G}OOD{5 SPACEs}{
    COMD 8}":GOTO910   :REM*205
890 PRINT"{CTRL 2}2250 - 2499{2
     SPACEs}:{2 SPACEs}{COMD 4}
    {SHFT G}OOD{5 SPACEs}{COMD
    8}"                :REM*155
900 IFRT<2250ANDRT>1999THENPRIN
    TCHR$(15)"{COMD 4}2000 - 22
    49{2 SPACEs}:{2 SPACEs}{CTR
    L 2}{SHFT F}AIR{6 SPACEs}{C
    OMD 8}";:GOTO920    :REM*29
910 PRINT"{COMD 4}2000 - 2249{2
     SPACEs}:{2 SPACEs}{CTRL 2}
    {SHFT F}AIR{7 SPACEs}{COMD
    8}";               :REM*173
920 WINDOW35,4,35,22,1:PRINTCHR
    $(143)CHR$(14);"{CTRL 4}ABC
    DEFGHIJKLMNOPQR";   :REM*63
930 WINDOW36,4,38,22,1:FORX=65T
    O82:GOSUB1160:NEXT :REM*229
940 WINDOW44,4,44,22,1:PRINT"{C
    TRL 4}STUVWXYZ";CHR$(142);"
    {COMD 8}ABCDEFGHIJ";
                       :REM*237
950 WINDOW45,4,47,22,1:FORX=83T
    O90:GOSUB1160:NEXT:FORX=193
    TO202:GOSUB1160:NEXT
                       :REM*225
960 WINDOW53,4,53,22,1:PRINT"{C
    OMD 8}KLMNOPQRSTUVWXYZ{COMD
     4}{CTRL 9}{COMD P}{CTRL 0}
    !";                 :REM*91
970 WINDOW54,4,56,22,1:FORX=203
    TO218:GOSUB1160:NEXT:FORX=3
    2TO33:GOSUB1160:NEXT:REM*57
980 WINDOW62,4,62,22,1:PRINTCHR
    $(14);"{COMD 4}#$%&'()*+,-.
    /01234";            :REM*31
990 WINDOW63,4,65,22,1:FORX=35T
    O52:GOSUB1160:NEXT  :REM*57
1000 WINDOW71,4,71,22,1:PRINT"{
     COMD 4}56789:;<=>?@[{LB.}]
     {UP ARROW}{LEFT ARROW}";
                       :REM*135
1010 WINDOW72,4,74,22,1:FORX=53
     TO64:GOSUB1160:NEXT:FORX=9
     1TO95:GOSUB1160:NEXT
                       :REM*229
1020 IFRT>2749THEN1030:ELSE1100
                        :REM*71
1030 FORX=1TO8:READFH(X),FA(X):
     NEXT:WF=64:A=3:D=0:SU=15:R
     =10:SD=A*16+D:SR=SU*16+R:S
     =54272:FORI=STOS+24:POKEI,
     0:NEXT:POKES+24,15:POKES+5
     ,AD:POKES+6,SR    :REM*114
1040 READN:IFN=0THEN1090 :REM*8
1050 IFN=9THENFORI=1TO125:NEXT:
     GOTO1040           :REM*88
1060 POKES+1,FH(N):POKES,FA(N):
     IFWF=64THENPOKES+3,7:POKES
     +2,150            :REM*128
1070 POKES+4,WF+1:FORT=1TO30:NE
     XT:POKES+4,WF:GOTO1040
                        :REM*64
1080 DATA 28,49,31,165,33,135,3
     7,162,42,62,44,193,50,60,2
     5,30,8,3,5,7,9,7,5,9,5,3,5
     ,3,8,9,9,9,8,3,5,7,9,7,5,9
     ,5,3,9,3,8,9,8,3,9,9,9,0
                        :REM*54
1090 RESTORE           :REM*120
1100 GETKEYB$           :REM*78
1110 IFB$=CHR$(133)THENGOTO1130
                        :REM*10
1120 IFB$=CHR$(135)THEN1140:ELS
     E1100             :REM*170
1130 WINDOW9,18,22,18,1:PRINTCH
     R$(15);"{CTRL 2}{2 SPACEs}
     {SHFT F}1 - {SHFT S}TART";
     :GOTO30            :REM*28
1140 WINDOW9,20,22,20,1:PRINTCH
     R$(15);"{CTRL 2}{2 SPACEs}
     {SHFT F}5 - {SHFT E}ND";:S
     LEEP2             :REM*106
1150 WINDOW0,0,79,24,1:COLOR5,4
     :PRINTCHR$(142):BANK15:SYS
     49425:PRINTCHR$(27)CHR$(88
     ):END             :REM*104
1160 IFMS%(X)>4THENPRINTUSING"{
     COMD 3}###";MS%(X):RETURN
                       :REM*192
1170 IFMS%(X)>0THENPRINTUSING"{
     CTRL 2}###";MS%(X):ELSEPRI
     NT"{3 SPACEs}";   :REM*244
1180 RETURN            :REM*218
```

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Once you're done with that key, you can go on to others. When you've found all the codes you need, press the restore key to exit Keycodes and continue programming, or press the run-stop/restore combination for a Basic warm start. You can enter the SYS command again at any time you desire to reaccess Keycodes.

In Keycodes mode, nearly all the normal keyboard functions are disabled. However, the shift, control and Commodore keys still work, so you can see the values of almost all key combinations, and shift/Commodore still toggles between the C-64's character sets.

One limitation of the program is that it reports a keycode of 15 for both shift keys, but the keycode value for the right shift key is actually 52. The ASCII and screen codes are the same for both keys.

Listing 1. Keycodes program.

```
10 REM KEYCODES 1.0 BRUCE L. FE
   LLOWS                :REM*58
20 REM PLACE CODE TOP OF BASIC
   SPACE               :REM*124
30 B=PEEK(55)+256*PEEK(56):B=B-
   451:POKE56,INT(B/256):POKE55
   ,B-256*INT(B/256)   :REM*112
40 CLR:B=PEEK(55)+256*PEEK(56):
   CK=0                :REM*236
50 FORC=BTOB+450:READA:CK=CK+A:
   POKEC,A:NEXT        :REM*126
60 IFCK<>53291THENPRINT"{CRSR D
   N}DATA ERROR":STOP   :REM*90
70 REM RELOCATE ABSOLUTE REFERE
   NCES                :REM*138
80 READNS:FORA=1TONS:READSO:SO=
   SO+B:SH=INT(SO/256):SL=SO-25
   6*INT(SO/256)        :REM*22
90 READNR:FORC=1TONR:READRO:RO=
   RO+B:READD:POKERO,SL:POKERO+
   D,SH:NEXT:NEXT      :REM*144
100 REM SET THE CORRECT VECTORS
                        :REM*90
110 SYS65517:IFPEEK(781)=40THEN
    140                 :REM*54
120 READNS:FORA=1TONS:READSO:RE
    ADNR:FORC=1TONR:READRO:RO=R
    O+B                :REM*104
130 POKERO,SO:NEXT:NEXT:REM*164
140 PRINT"{SHFT CLR}{CRSR DN}SY
    S";B:NEW           :REM*110
150 DATA 120,169,0,133,207,133,
    2,230,204,173,143,2,133,251
    ,173,144,2,133     :REM*172
160 DATA 252,169,133,141,143,2,
    169,192,141,144,2,169,147,1
    41,24,3,169        :REM*254
170 DATA 193,141,25,3,169,113,1
    33,62,169,193,133,63,169,12
    4,133,64,169       :REM*214
180 DATA 193,133,65,169,139,133
    ,66,169,193,133,67,169,2,13
    3,105,169,100      :REM*102
190 DATA 133,106,169,10,133,107
    ,32,68,229,162,1,32,255,233
    ,164,2,185,62       :REM*60
200 DATA 0,133,253,200,185,62,0
    ,133,254,200,132,2,160,0,17
    7,253,133,211      :REM*238
210 DATA 200,177,253,240,6,32,2
    10,255,200,208,246,232,232,
    232,232,224,13     :REM*100
220 DATA 208,212,32,102,229,234
    ,234,169,0,240,250,138,24,7
    4,176,8,44,142      :REM*72
230 DATA 2,240,248,232,208,245,
    224,10,176,39,173,141,2,56,
    237,142,2,176      :REM*150
240 DATA 3,76,50,193,240,21,168
    ,185,108,193,133,203,173,14
    1,2,201,3,208      :REM*178
250 DATA 8,173,24,208,73,2,141,
    24,208,165,203,197,197,240,
    115,201,64,240      :REM*64
260 DATA 111,72,173,142,2,10,20
    1,8,144,2,169,6,168,185,121
    ,235,133,245       :REM*215
270 DATA 185,122,235,133,246,16
    2,3,32,255,233,169,10,133,2
    11,104,168,177      :REM*37
280 DATA 245,133,215,48,17,32,5
    5,193,48,25,201,96,176,4,41
    ,63,16,17,41       :REM*193
290 DATA 223,16,13,41,127,201,1
    27,208,2,169,94,32,55,193,9
    ,64,133,253          :REM*7
300 DATA 174,134,2,32,28,234,16
    2,7,32,255,233,160,4,165,20
    3,32,62,193        :REM*141
310 DATA 160,11,165,215,32,62,1
    93,162,11,32,255,233,160,11
    ,165,253,32,62      :REM*71
320 DATA 193,32,102,229,162,255
    ,76,38,235,201,32,176,2,9,1
    28,96,162,0        :REM*203
330 DATA 132,211,32,70,193,96,1
    60,0,228,105,176,21,56,245,
    106,144,3,200      :REM*231
340 DATA 16,249,117,106,133,112
    ,152,72,165,112,232,32,70,1
    93,104,9,48        :REM*189
350 DATA 174,134,2,32,28,234,19
    8,211,96,0,15,61,0,58,5,67,
    72,65,82,65,67     :REM*213
360 DATA 84,69,82,0,0,75,69,89,
    67,79,68,69,32,65,83,67,73,
    73,0,8,83,67       :REM*171
370 DATA 82,69,69,78,0,198,204,
    165,251,141,143,2,165,252,1
    41,144,2,32        :REM*219
380 DATA 138,255,32,68,229,186,
    189,1,1,232,232,157,1,1,154
    ,189,2,1,24        :REM*167
390 DATA 105,1,157,2,1,208,6,12
    5,3,1,157,3,1,108,24,3
                       :REM*215
400 DATA 10,306,1,160,1,364,1,1
    66,1,311,2,235,1,260,1
                       :REM*205
410 DATA 318,3,282,1,289,1,301,
    1,326,2,323,1,350,1,133,1,2
    0,5                :REM*245
420 DATA 403,1,30,5,369,1,40,4,
    380,1,48,4,395,1,56,4
                       :REM*221
430 DATA 13,95,2,76,419,141,4,8
    1,220,275,294,234,4,82,221,
    276,295            :REM*181
440 DATA 129,2,125,304,70,1,208
    ,71,1,213,236,2,209,214
                       :REM*145
450 DATA 170,2,270,359,186,1,30
    9,5,2,178,183,144,2,179,184
                         :REM*1
460 DATA 40,1,366,16,1,368
                       :REM*237■
```

Pegboard

Young and old alike will jump at the chance to play this challenging, traditional game.

◆

By JOHN OLSEN

The pegboard game has been around in various forms for years. It's played on a board perforated by 33 holes arranged in a plus-sign shape, as in Figure 1, below, and in the illustration. At the start, pegs are placed in all the holes but the center one.

The object of the game is to remove from play as many pegs as possible by jumping over them, one at a time, with other pegs. Play continues until you can't move any more.

You win if you eliminate all the pegs but one—a task that's more difficult than it sounds. Usually you'll end up with several pegs stranded in different parts of the board with no adjacent peg to jump over. Avoiding this downfall takes a combination of strategy and luck.

My Pegboard program simulates the traditional board game. The playing surface is displayed on the screen, along with a summary of the rules. The program uses graphics, color and sound to enhance play.

You move the pegs with a joystick, plugged into port 2, that places a yellow cursor in any desired position on the board. When it's over the peg you want to move, press the fire-button, and that peg turns into an asterisk. Then use the joystick to place the yellow cursor on the position where you want the peg to go. Pressing the fire-button a second time moves the peg from its original position to the newly chosen one and eliminates the peg it jumped over. You can move horizontally or vertically, but not on a diagonal.

Pegboard checks your moves and permits only legal ones. It also scans the board continously to see when no more moves are possible. When that occurs, the game is over, and the computer counts the remaining pegs to see if you've won.

In writing Pegboard, I employed a ►

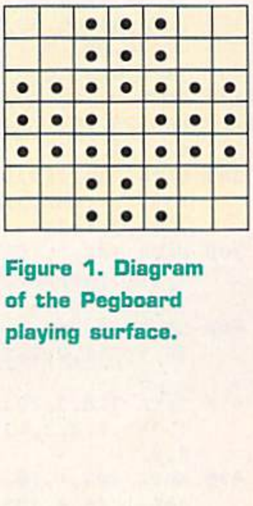
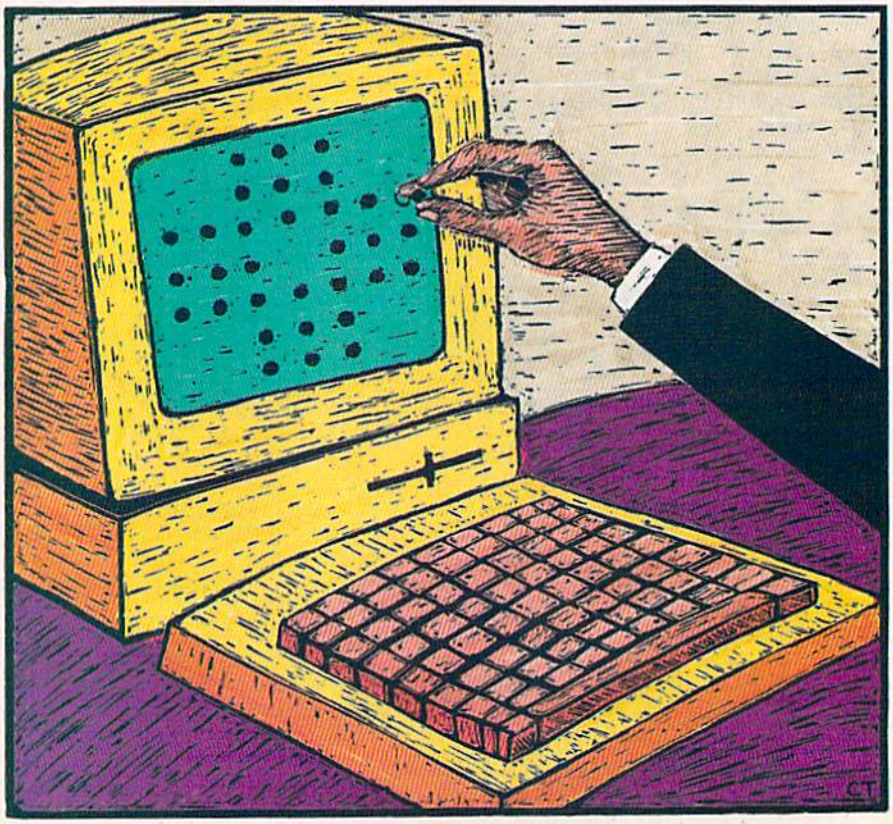


Figure 1. Diagram of the Pegboard playing surface.



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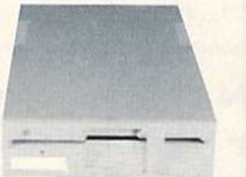

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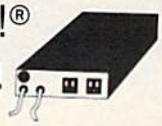

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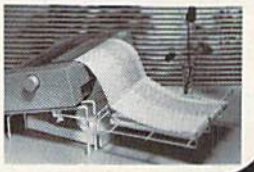

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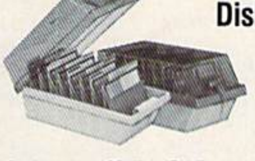

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programming strategy that doesn't require arrays, takes little memory and makes the program run quickly. Since the game board is constantly displayed on the screen, I have the program Peek the screen memory to determine which holes contain pegs and which are empty. This Peek also tells the joystick-controlled cursor where the edges of the game board are. With this approach, the program needs to keep track only of the cursor position. Nearly everything else is kept in the screen memory.

When you play Pegboard, you'll find that it's fairly easy to leave fewer than ten pegs on the board, and if you're lucky, you may remove all but two or three. However, it will take real skill to remove all but one. Keep working at it, and good luck! Ⓡ

John Olsen has been a user and programmer since the late 1960s. He has taught computer and mathematics courses for 13 years, frequently speaks at computer seminars and conferences and has had over 100 articles and programs published.

Listing 1. Pegboard program.

```
1 REM PEGBOARD 64 (C) 1986 JOHN
   OLSEN                  :REM*207
10 POKE53280,0:POKE53281,0:N%=9
   :M%=81:O%=80:P%=160:Q%=156:R
   %=400:S=54272          :REM*34
20 POKE53265,PEEK(53265)AND239
                          :REM*220
30 PRINT"{SHFT CLR}{CTRL 5}"CHR
   $(142)CHR$(8)TAB(14)"{COMD A
   }{9 SHFT *s}{COMD S}"
                          :REM*152
40 PRINTTAB(14)"{SHFT -}{CTRL 8
   }PEG BOARD{CTRL 5}{SHFT -}"
                          :REM*216
50 PRINTTAB(14)"{COMD Z}{9 SHFT
    *s}{COMD X}"          :REM*228
60 PRINTTAB(13)"{CTRL 8}{CRSR D
   N}BY JOHN OLSEN{2 CRSR DNs}"
                          :REM*236
70 PRINT"{CTRL 4}REMOVE ONE"TAB
   (31)"DIAGONAL"         :REM*22
80 PRINT"PEG AT A"TAB(34)"JUMPS
   "                      :REM*78
90 PRINT"TIME, BY"TAB(32)"ARE N
   OT"                    :REM*38
100 PRINT"JUMPING"TAB(32)"ALLOW
    ED"                   :REM*40
110 PRINT"OVER IT"        :REM*54
120 PRINT"WITH AN"        :REM*184
130 PRINT"ADJACENT"       :REM*148
140 PRINT"PEG"TAB(31)     :REM*174
150 PRINTTAB(32)"{3 CRSR DNs}YO
    U WIN"                :REM*242
160 PRINT"USE YOUR"TAB(31)"WHEN
     ONE"                 :REM*80
170 PRINT"JOYSTICK"TAB(31)"PEG
    ONLY"                 :REM*204
180 PRINT"IN PORT 2"TAB(32)"REM
    AINS"                 :REM*248
190 PRINT"{HOME}{6 CRSR DNs}"TA
    B(15)"{CTRL 1}+ + + + +{CTR
    L 6}"                 :REM*206
200 PRINTTAB(16)"{COMD A}{SHFT
    *}{COMD R}{SHFT *}{COMD R}{
    SHFT *}{COMD S}"      :REM*134
210 PRINTTAB(15)"{CTRL 1}+{CTRL
     6}{SHFT -} {SHFT -} {SHFT
    -} {SHFT -}{CTRL 1}+{CTRL 6
    }"                    :REM*10
220 PRINTTAB(16)"{COMD Q}{SHFT
    *}{SHFT +}{SHFT *}{SHFT +}{
    SHFT *}{COMD W}"      :REM*14
230 PRINTTAB(11)"{CTRL 1}+ + +{
    CTRL 6}{SHFT -} {SHFT -} {S
    HFT -} {SHFT -}{CTRL 1}+ +
    +{CTRL 6}"            :REM*214
240 PRINTTAB(12)"{COMD A}{SHFT
    *}{COMD R}{SHFT *}{SHFT +}{
    SHFT *}{SHFT +}{SHFT *}{SHF
    T +}{SHFT *}{SHFT +}{SHFT *
    }{COMD R}{SHFT *}{COMD S}"
                          :REM*46
250 PRINTTAB(11)"{CTRL 1}+{CTRL
     6}{SHFT -} {SHFT -} {SHFT
    -} {SHFT -} {SHFT -} {SHFT
    -} {SHFT -} {SHFT -}{CTRL 1
    }+{CTRL 6}"           :REM*176
260 PRINTTAB(12)"{COMD Q}{SHFT
    *}{SHFT +}{SHFT *}{SHFT +}{
    SHFT *}{SHFT +}{SHFT *}{SHF
    T +}{SHFT *}{SHFT +}{SHFT *
    }{SHFT +}{SHFT *}{COMD W}"
                          :REM*183
270 PRINTTAB(11)"{CTRL 1}+{CTRL
     6}{SHFT -} {SHFT -} {SHFT
    -} {SHFT -} {SHFT -} {SHFT
    -} {SHFT -} {SHFT -}{CTRL 1
    }+{CTRL 6}"           :REM*197
280 PRINTTAB(12)"{COMD Q}{SHFT
    *}{SHFT +}{SHFT *}{SHFT +}{
    SHFT *}{SHFT +}{SHFT *}{SHF
    T +}{SHFT *}{SHFT +}{SHFT *
    }{SHFT +}{SHFT *}{COMD W}"
                          :REM*203
290 PRINTTAB(11)"{CTRL 1}+{CTRL
     6}{SHFT -} {SHFT -} {SHFT
    -} {SHFT -} {SHFT -} {SHFT
    -} {SHFT -} {SHFT -}{CTRL 1
    }+{CTRL 6}"           :REM*217
300 PRINTTAB(12)"{COMD Z}{SHFT
    *}{COMD E}{SHFT *}{SHFT +}{
    SHFT *}{SHFT +}{SHFT *}{SHF
    T +}{SHFT *}{SHFT +}{SHFT *
    }{COMD E}{SHFT *}{COMD X}"
                          :REM*25
310 PRINTTAB(11)"{CTRL 1}+ + +{
    CTRL 6}{SHFT -} {SHFT -} {S
    HFT -} {SHFT -}{CTRL 1}+ +
    +{CTRL 6}"            :REM*39
320 PRINTTAB(16)"{COMD Q}{SHFT
    *}{SHFT +}{SHFT *}{SHFT +}{
    SHFT *}{COMD W}"      :REM*115
330 PRINTTAB(15)"{CTRL 1}+{CTRL
     6}{SHFT -} {SHFT -} {SHFT
    -} {SHFT -}{CTRL 1}+{CTRL 6
    }"                    :REM*131
340 PRINTTAB(16)"{COMD Z}{SHFT
    *}{COMD E}{SHFT *}{COMD E}{
    SHFT *}{COMD X}"      :REM*193
350 PRINTTAB(15)"{CTRL 1}+ + +
    + +{CTRL 2}"          :REM*91
360 PRINT"{HOME}{8 CRSR DNs}"TA
    B(17)"{CTRL 8}{SHFT Q}{CRSR
     RT}{COMD 3}{SHFT Q}{CRSR R
    T}{SHFT Q}{CRSR DN}":REM*69
370 PRINTTAB(17)"{SHFT Q}{CRSR
    RT}{SHFT Q}{CRSR RT}{SHFT Q
    }{CRSR DN}"           :REM*81
380 PRINTTAB(13)"{SHFT Q}{CRSR
    RT}{SHFT Q}{CRSR RT}{SHFT Q
    }{CRSR RT}{SHFT Q}{CRSR RT}
    {SHFT Q}{CRSR RT}{SHFT Q}{C
    RSR RT}{SHFT Q}{CRSR DN}"
                          :REM*219
390 PRINTTAB(13)"{SHFT Q}{CRSR
    RT}{SHFT Q}{CRSR RT}{SHFT Q
    }{CRSR RT} {CRSR RT}{SHFT Q
    }{CRSR RT}{SHFT Q}{CRSR RT}
    {SHFT Q}{CRSR DN}" :REM*121
400 PRINTTAB(13)"{SHFT Q}{CRSR
    RT}{SHFT Q}{CRSR RT}{SHFT Q
    }{CRSR RT}{SHFT Q}{CRSR RT}
    {SHFT Q}{CRSR RT}{SHFT Q}{C
    RSR RT}{SHFT Q}{CRSR DN}"
                          :REM*239
410 PRINTTAB(17)"{SHFT Q}{CRSR
    RT}{SHFT Q}{CRSR RT}{SHFT Q
    }{CRSR DN}"           :REM*121
420 PRINTTAB(17)"{SHFT Q}{CRSR
    RT}{SHFT Q}{CRSR RT}{SHFT Q
    }{CRSR DN}"           :REM*131
430 POKE53265,PEEK(53265)OR16
                          :REM*249
440 BL=1361:L=BL          :REM*123
450 LL=L                  :REM*13
460 POKES+4,0:POKES+23,0:POKES+
    22,0                  :REM*113
470 P=255-(PEEK(56464)OR128)
                          :REM*179
480 IFPAND16THEN590       :REM*123
490 IFPAND1THENL=L-O%     :REM*143
500 IFPAND2THENL=L+O%     :REM*181
510 IFPAND4THENL=L-2      :REM*201
520 IFPAND8THENL=L+2      :REM*82
530 IFL=LLTHEN470         :REM*164
540 IFPEEK(L)=43THENL=LL:GOTO47
    0                     :REM*228
550 POKELL+54272,10:IFPEEK(LL)=
    P%THENPOKELL,32       :REM*246
560 POKEL+54272,7:IFPEEK(L)=32T
    HENPOKEL,P%           :REM*208
570 GOSUB1050             :REM*178
580 GOTO450               :REM*104
590 WAIT56464,16          :REM*60
600 IFSL=.ANDPEEK(L)=P%THEN450
                          :REM*224
610 IFPEEK(L)=42THENSL=.:POKEL,
    M%:GOTO450            :REM*226
```

```
620 IFSL=.THENSL=L:POKEL,42:GOT
    O450                    :REM*74
630 IFABS(SL-L)<>P%ANDABS(SL-L)
    <>4THEN450              :REM*44
640 IFPEEK(L)<>P%THEN450:REM*16
650 T=(SL+L)/2             :REM*176
660 IFPEEK(T)=32THEN450:REM*188
670 POKESL,32:POKEL,M%:POKET,32
                           :REM*162
680 SL=.:C=.               :REM*138
690 FORY=.TO1:FORX=.TO2:REM*112
700 T=BL+O%*Y+2*X          :REM*178
710 IFPEEK(T)=M%THENC=C+1:GOTO7
    50                     :REM*186
720 IFPEEK(T+O%)=M%THENIFPEEK(T
    +P%)=M%THENY=N%:X=N%:GOTO75
    0                      :REM*188
730 IFX=.THENIFPEEK(T+2)=M%THEN
    IFPEEK(T+4)=M%THENY=N%:X=N%
    :GOTO750               :REM*134
740 IFX=2THENIFPEEK(T-2)=M%THEN
    IFPEEK(T-4)=M%THENY=N%:X=N%
                           :REM*164
750 NEXT:NEXT              :REM*244
760 GOSUB1050              :REM*112
770 IFX>N%ORY>N%THEN450      :REM*5
780 FORY=.TO2:FORX=.TO6 :REM*79
790 T=BL+O%*Y+2*X+Q%       :REM*255
800 IFPEEK(T)=M%THENC=C+1:GOTO8
    60                      :REM*33
810 IFPEEK(T+O%)=M%THENIFPEEK(T
    +P%)=M%THENY=N%:X=N%:GOTO86
    0                      :REM*121
820 IFPEEK(T-O%)=M%THENIFPEEK(T
    -P%)=M%THENY=N%:X=N%:GOTO86
    0                      :REM*199
830 IFPEEK(T+2)=M%THENIFPEEK(T+
    4)=M%THENY=N%:X=N%:GOTO860
                            :REM*65
840 IFPEEK(T-2)=M%THENIFPEEK(T-
    4)=M%THENY=N%:X=N% :REM*199
850 GOSUB1050              :REM*203
860 NEXT:NEXT               :REM*99
870 IFX>N%ORY>N%THEN450:REM*105
880 FORY=.TO1:FORX=.TO2 :REM*47
890 T=BL+O%*Y+2*X+R%        :REM*99
900 IFPEEK(T)=M%THENC=C+1:GOTO9
    40                     :REM*121
910 IFPEEK(T-O%)=M%THENIFPEEK(T
    -P%)=M%THENY=N%:X=N%:GOTO94
    0                      :REM*193
920 IFX=.THENIFPEEK(T+2)=M%THEN
    IFPEEK(T+4)=M%THENY=N%:X=N%
    :GOTO940                :REM*69
930 IFX=2THENIFPEEK(T-2)=M%THEN
    IFPEEK(T-4)=M%THENY=N%:X=N%
                            :REM*99
940 NEXT:NEXT              :REM*179
950 IFX>N%ORY>N%THEN450:REM*185
960 POKEL+54272,10         :REM*213
970 IFC=1THENA$=" YOU WIN!":B$=
    A$                     :REM*233
980 IFC>1THENA$=" TRY AGAIN":B$
    =STR$(C)+" LEFT!"  :REM*213
990 POKE781,24:POKE782,6:SYS655
    20                      :REM*27
1000 PRINT"{COMD 7}"A$TAB(23)B$
     ;                      :REM*71
1010 WAIT56464,16:WAIT56464,16,
     16                     :REM*85
1020 POKE782,7:SYS65520 :REM*41
1030 PRINT"{25 SPACEs}";
                           :REM*150
1040 WAIT56464,16:GOTO360
                           :REM*118
1050 POKES,240:POKES+1,15:POKES
     +6,1                   :REM*22
1060 POKES+5,8:POKES+22,104:POK
     ES+23,2                :REM*50
1070 POKES+24,79:POKES+4,129
                           :REM*182
1080 FORZ=1TO20:NEXT:RETURN
                            :REM*18
```

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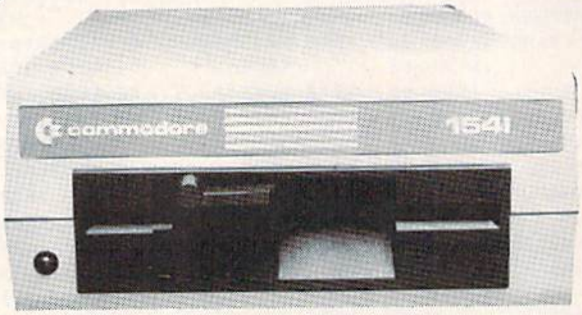

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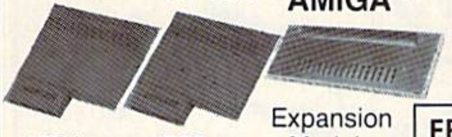

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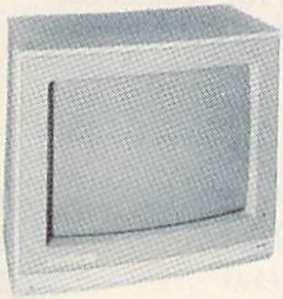

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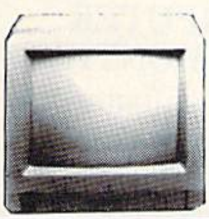

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Join Computer Learning Month

WHY A COMPUTER LEARNING MONTH?

Learning with computers is giving America's youth the winning edge. Never before has there been such an exciting event devoted exclusively to bringing parents, teachers and kids together for a month-long celebration of learning with software and computers. It's called Computer Learning Month, and it's happening this October. Computer Learning Month is so important that a commemorative bill has been introduced into both Houses of Congress declaring October 1987 as Computer Learning Month. Sponsored by major educational software and computer companies and supported by national educational organizations and State Departments of Education, Computer Learning Month will be an event in which everyone will be a winner – an event you won't want to miss.

EVERYONE WILL BE A WINNER…

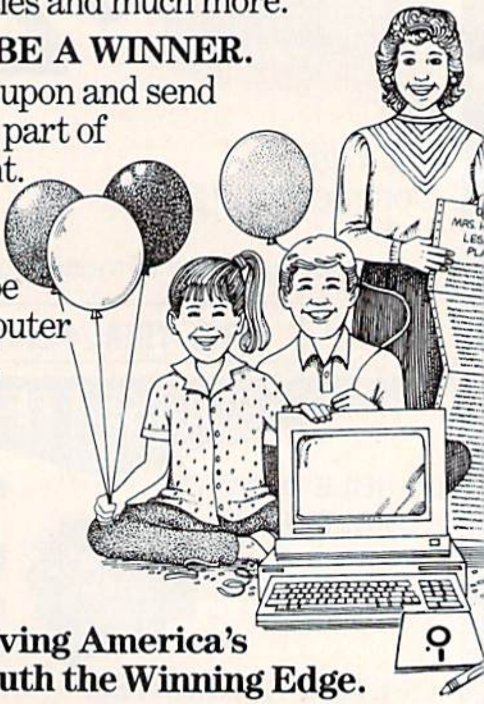
Contests! Contests! Contests! Thousands of dollars worth of great prizes will be given away in October. Essay and art contests for families and kids. Lesson plan contests for teachers. And if you are a prize winner, your school will be a prize winner, too.

Exciting programs for families. Now parents can learn how to help their children benefit from using a computer, whether they own one or not. We're giving away a free booklet designed just for parents. There will be fairs and special events sponsored by local retailers. And we know schools will be hosting special parent nights.

A month full of activities for teachers. Teachers can join in the celebration easily and learn new ways to help their students benefit from using computers. Every teacher can receive a celebration poster, chock-full of lesson plan ideas, activities and much more.

IT'S EASY TO BE A WINNER.

Just clip this coupon and send it in today to be a part of this national event. We'll send you everything you need so you can be a winner in Computer Learning Month. Don't delay.



COMPUTER LEARNING MONTH
October '87

Giving America's Youth the Winning Edge.

YES! I WANT TO BE A WINNER IN OCTOBER!

☐ Please send me contest rules.
☐ Please add my name to the Computer Learning Month Mailing List.

I am a ☐ teacher ☐ parent ☐ student
I own a computer ☐ yes ______________ ☐ no
type of computer
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SCHOOL ______________
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RUN it right: **C-64; printer optional**

EASY APPLICATIONS

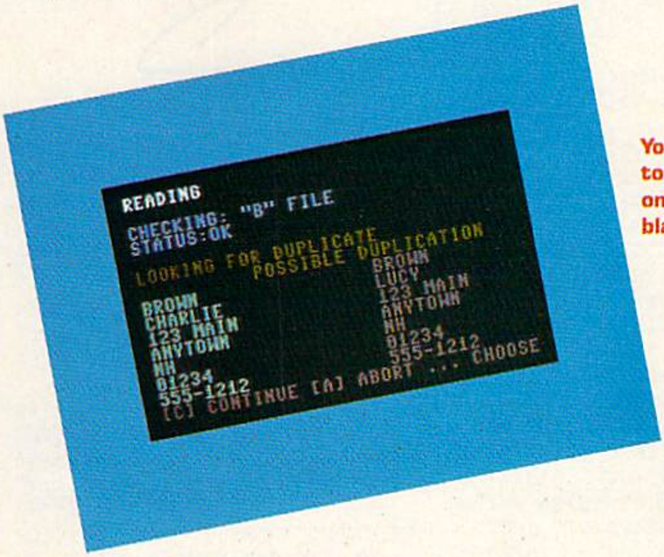
ELECTRONIC ADDRESS BOOK: Let your computer and this program combine to become your little black book.

By CHARLES KRUMHOLT

"A short pencil is better than a long memory." You've probably heard that old adage, and if you follow it, you probably keep a little black book for jotting down addresses and phone numbers. Well, now that adage should say, "a C-64 is better than a long memory," because I've written The Directory, a program that keeps a list of addresses and phone numbers and provides printouts. The Directory has made my little black book obsolete, and it'll make yours out-moded, too.

I keep a printout of The Directory's alphabetical file by each of my phones for reference and for jotting down new information. Once a month or so, I collect the printouts and make changes to the file. Even if you don't have a printer, you'll find The Directory's list helpful when it's time to write holiday cards or send out invitations.

When you add an entry to the file, the program checks to make sure it's not a duplicate. You can access individual entries by name, and I've provided a quick and easy way to scan the entire file. Program options include hard copy, delete, update and more. R



```
READING

CHECKING: "B" FILE
STATUS:OK

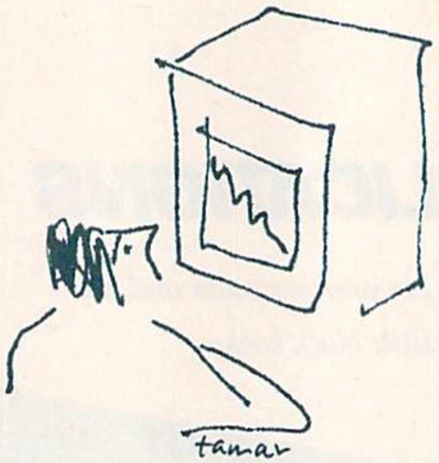
LOOKING FOR DUPLICATE
          POSSIBLE DUPLICATION
                   BROWN
                   LUCY
                   123 MAIN
BROWN              ANYTOWN
CHARLIE            NH
123 MAIN           01234
ANYTOWN            555-1212
NH
01234
555-1212
[C] CONTINUE [A] ABORT ... CHOOSE
```

You're not likely to misplace this on-screen little black book.

Charles Krumholt is a programmer who uses computers both at home and at work.

Listing 1. The Directory program.

```
10 P=53280:POKEP,0:POKEP+1,0:CL
   R                       :REM*42
20 DIMB$(200,7),C$(7),P(200)
                           :REM*244
30 PRINT"{SHFT CLR}{CTRL 9}{COM
   D 2}THE DIRECTORY{9 SPACEs}B
   Y CHUCK KRUMHOLT":PRINT"{CRS
   R DN}CHOOSE THE KEY...{CRSR
   DN}"                    :REM*90
40 PRINT"{CRSR DN}[I] INPUT NEW
    INFORMATION"          :REM*182
50 PRINT"{CRSR DN}[D] DISPLAY R
   ECORDS BY NAME"        :REM*250
60 PRINT"{CRSR DN}[S] SCAN ALL
   RECORDS IN FILE"       :REM*188
70 PRINT"{CRSR DN}[E] EXPLORE A
   LL FILES"               :REM*154
80 PRINT"{CRSR DN}[P] PRINT TEL
   EPHONE LIST"             :REM*24
90 PRINT                  :REM*192
100 GETA$:IFA$=""THEN100
                           :REM*232
110 IFA$="I"THEN450         :REM*90
120 IFA$="D"THEN170        :REM*230
130 IFA$="S"THENS=1:GOTO170
                           :REM*200
140 IFA$="E"THEN1440       :REM*168
150 IFA$="P"THEN1720        :REM*48
160 GOTO100                 :REM*90
170 PRINT"{SHFT CLR}{CTRL 4}REA
    DING A FILE";SPC(10);"[0]=Z
    ERO EXIT"              :REM*150
180 INPUT"{CTRL 2}LAST NAME:{CO
    MD 7}";N$:F$=LEFT$(N$,1)
                            :REM*74
190 IFF$="0"THEN10:IFASC(F$)<65
    ORASC(F$)>90THEN1910
                           :REM*240
200 GOSUB980                :REM*82
210 IFE$<>"OK"THEN180       :REM*52
220 FORA=0TON              :REM*112
230 IFS=0ANDB$(A,0)<>N$THEND=D+ ►
```



```
    1:GOTO420               :REM*184
240 PRINT"{SHFT CLR}{3 CRSR DNs
    }{CTRL 6}LAST NAME.{CTRL 8}
    :{2 SPACEs}";B$(A,0)
                            :REM*118
250 PRINT"{CRSR DN}{CTRL 6}FIRS
    T NAME:{CTRL 8}{2 SPACEs}";
    B$(A,1)                 :REM*104
260 PRINT"{CRSR DN}{CTRL 6}STRE
    ET & #:{CTRL 8}{2 SPACEs}";
    B$(A,2)                 :REM*233
270 PRINT"{CRSR DN}{CTRL 6}CITY
    ......:{CTRL 8}{2 SPACEs}";
    B$(A,3)                 :REM*249
280 PRINT"{CRSR DN}{CTRL 6}STAT
    E.....:{CTRL 8}{2 SPACEs}";
    B$(A,4)                 :REM*215
290 PRINT"{CRSR DN}{CTRL 6}ZIP
    CODE..:{CTRL 8}{2 SPACEs}";
    B$(A,5)                  :REM*15
300 PRINT"{CRSR DN}{CTRL 6}PHON
    E{2 SPACEs}#..:{CTRL 8}{2 S
    PACEs}";B$(A,6)         :REM*133
310 PRINT"{CRSR DN}{CTRL 6}REMA
    RKS...:{CTRL 8}{2 SPACEs}";
    B$(A,7);"{CRSR DN}"  :REM*53
320 PRINT"RECORD#:";ASC(F$);"-"
    ;RIGHT$(STR$(A),LEN(STR$(A-
    1)))                     :REM*93
330 IFA<=NTHENPRINT"{CRSR DN}{C
    OMD 7}{CTRL 9}D{CTRL 0}ELET
    E";                      :REM*63
340 IFA<=NTHENPRINT" {CTRL 9}H{
    CTRL 0}/COPY {CTRL 9}E{CTRL
     0}XIT {CTRL 9}U{CTRL 0}PDA
    TE";:IFA<NTHENPRINT" {CTRL
    9}N{CTRL 0}EXT";         :REM*81
350 IFA>0THENIFB$(A-1,0)=N$THEN
    PRINT"{COMD 7} {CTRL 9}P{CT
    RL 0}REVIOUS"           :REM*141
360 GETA$:IFA$=""THEN360
                            :REM*175
370 IFA$="E"THEN10           :REM*37
380 IFA$="D"THEN1600        :REM*233
390 IFA$="H"THENGOSUB1380
                            :REM*125,
400 IFA$="P"THENIFA>0THENIFB$(A
    -1,0)=N$THENA=A-1:GOTO240
                            :REM*151
410 IFA$="U"THEN1200        :REM*111
420 IFS=0ANDD>NTHEND=0:PRINT"NO
     RECORD OF:";N$:GOSUB1920
                            :REM*251
430 NEXTA                   :REM*195
440 S=0:COTO10               :REM*19
450 REM CREATE              :REM*169
460 PRINT"{SHFT CLR}{CTRL 4}CRE
    ATING A FILE"            :REM*17
470 INPUT"{CTRL 2}LAST NAME:";N
    $:F$=LEFT$(N$,1):C$(0)=N$:G
    OSUB1870                 :REM*67
480 OPEN15,8,15:OPEN2,8,2,+F$+"
    ,U,R":INPUT#15,E1,E$,E2,E3:
    CLOSE2:CLOSE15:PRINTE$
                            :REM*231
490 IFE$="OK"THENT$="@0:":F=1
                             :REM*31
500 IFE$="FILE NOT FOUND"THENT$
    ="0:"                    :REM*67
510 PRINT"{3 CRSR DNs}{CTRL 5}F
    IRST NAME:"              :REM*73
520 PRINT"{CRSR DN}STREET & #:"
                            :REM*208
530 PRINT"{CRSR DN}CITY......:"
                            :REM*214
540 PRINT"{CRSR DN}STATE.....:"
                             :REM*68
550 PRINT"{CRSR DN}ZIP CODE..:"
                            :REM*100
560 PRINT"{CRSR DN}PHONE{2 SPAC
    Es}#..:"                :REM*158
570 PRINT"{CRSR DN}REMARKS...:"
                             :REM*42
580 INPUT"{HOME}{6 CRSR DNs}{CT
    RL 2}FIRST NAME:";C$(1)
                            :REM*188
590 PRINT"{CRSR UP}{CTRL 5}FIRS
    T NAME:{CTRL 2}"        :REM*198
600 INPUT"{CRSR DN}STREET & #:"
    ;C$(2)                  :REM*136
610 PRINT"{CRSR UP}{CTRL 5}STRE
    ET & #:{CTRL 2}"         :REM*72
620 INPUT"{CRSR DN}CITY......:"
    ;C$(3)                  :REM*184
630 PRINT"{CTRL 5}{CRSR UP}CITY
    ......:{CTRL 2}"        :REM*168
640 INPUT"{CRSR DN}STATE.....:"
    ;C$(4)                   :REM*80
650 PRINT"{CTRL 5}{CRSR UP}STAT
    E.....:{CTRL 2}"        :REM*136
660 INPUT"{CRSR DN}ZIP CODE..:"
    ;C$(5)                  :REM*154
670 PRINT"{CTRL 5}{CRSR UP}ZIP
    CODE..:{CTRL 2}"        :REM*194
680 INPUT"{CRSR DN}PHONE{2 SPAC
    Es}#..:";C$(6)          :REM*254
690 PRINT"{CTRL 5}{CRSR UP}PHON
    E{2 SPACEs}#..:{CTRL 2}"
                             :REM*58
700 INPUT"{CRSR DN}REMARKS...:"
    ;C$(7)                  :REM*180
710 PRINT"{CTRL 5}{CRSR UP}REMA
    RKS...:{CTRL 2}"         :REM*82
720 FORB=0TO7:IFC$(B)=""THENC$(
    B)="N/A"                 :REM*94
730 NEXTB                   :REM*248
740 IFF=1THENGOSUB960:REM READ
                            :REM*248
750 IFF=0THENGOSUB1080:REM TRAN
    SENTRY                    :REM*0
760 REM ARRAY IN MEMORY:REM*242
770 REM PREVENT DUPLICATION
                            :REM*111
780 PRINT"LOOKING FOR DUPLICATE
    "                        :REM*57
790 FORA=0TON               :REM*173
800 IFB$(A,0)=C$(0)THEND=D+1
                             :REM*75
810 IFB$(A,1)=C$(1)ANDC$(1)<>"N
    /A"THEND=D+1             :REM*21
820 IFB$(A,2)=C$(2)ANDC$(2)<>"N
    /A"THEND=D+1            :REM*111
830 IFB$(A,6)=C$(6)ANDC$(6)<>"N
    /A"THEND=D+1            :REM*191
840 IFB$(A,7)=C$(7)ANDC$(7)<>"N
    /A"THEND=D+1             :REM*27
850 IFD=<1THEND=0:GOTO910
                            :REM*199
860 PRINTD,"POSSIBLE DUPLICATIO
    N":D=0                  :REM*229
870 FORB=0TO6:PRINT"{CTRL 4}";B
    $(A,B):PRINT"{CRSR UP}{CTRL
     3}";TAB(20);C$(B):NEXTB
                             :REM*17
880 PRINT"[C] CONTINUE [A] ABOR
    T ... CHOOSE"            :REM*65
890 GETA$:IFA$=""THEN890:REM*37
900 IFA$="A"THEN950         :REM*131
910 NEXTA                   :REM*165
920 PRINT"[S]AVE{2 SPACEs}[A]BO
    RT{5 SPACEs}... CHOOSE"
                            :REM*175
930 GETA$:IFA$=""THEN930
                            :REM*235
940 IFA$="S"THEN1080        :REM*243
950 GOTO10                  :REM*109
960 PRINT"READING"          :REM*145
970 IFF<>1THENPRINT"1010 WITHOU
    T GOSUB":END            :REM*179
980 OPEN15,8,15:OPEN2,8,2,+F$+"
    ,U,R":INPUT#15,E1,E$,E2,E3:
    GOSUB1700                :REM*85
990 INPUT#2,N                :REM*17
1000 FORA=0TON:FORB=0TO7:INPUT#
     2,B$(A,B):NEXTB:NEXTA
                            :REM*117
1010 CLOSE2:CLOSE15:RETURN
                            :REM*255
1020 REM SAVE FILE(S)  :REM*193
1030 OPEN15,8,15:OPEN2,8,2,+T$+
     F$+",U,W"              :REM*236
1040 PRINT#2,N              :REM*148
1050 FORA=0TON:FORB=0TO7:PRINT#
     2,B$(A,B):NEXTB:NEXTA
                            :REM*188
1060 CLOSE2:INPUT#15,E1,E$,E2,E
     3:IFE$<>"OK"THENPRINT"ERRO
     R AFTER SAVE?",E$:END
                            :REM*116
1070 CLOSE15:RETURN         :REM*126
1080 IFF=1THENN=N+1         :REM*130
1090 FORB=0TO7:B$(N,B)=C$(B):NE
     XTB                    :REM*218
1100 IFN=0THENGOSUB1020:GOTO10
                            :REM*232
1110 GOSUB1310              :REM*128
1120 PRINT"SAVING RECORD TO FIL
     E"                      :REM*56
```

```
1130 OPEN15,8,15:OPEN2,8,2,+T$+
     F$+",U,W"           :REM*80
1140 PRINT#2,N           :REM*248
1150 FORA=0TON:FORB=0TO7:PRINT#
     2,B$(P(A),B):NEXTB:NEXTA
                         :REM*222
1160 CLOSE2:INPUT#15,E1,E$,E2,E
     3:IFE$<>"OK"THENPRINT"ERRO
     R AFTER SAVE?",E$:END
                         :REM*216
1170 CLOSE15             :REM*246
1180 PRINT"{SHFT CLR}FILE ADDED
      TO EXISTING FILE"   :REM*4
1190 GOTO10               :REM*94
1200 INPUT"{HOME}{5 CRSR DNs}{C
     TRL 6}FIRST NAME:{CTRL 8}"
     ;B$(A,1)             :REM*68
1210 INPUT"{CRSR DN}{CTRL 6}STR
     EET & #:{CTRL 8}";B$(A,2)
                          :REM*14
1220 INPUT"{CRSR DN}{CTRL 6}CIT
     Y......:{CTRL 8}";B$(A,3)
                          :REM*24
1230 INPUT"{CRSR DN}{CTRL 6}STA
     TE.....:{CTRL 8}";B$(A,4)
                         :REM*240
1240 INPUT"{CRSR DN}{CTRL 6}ZIP
      CODE..:{CTRL 8}";B$(A,5)
                          :REM*34
1250 INPUT"{CRSR DN}{CTRL 6}PHO
     NE{2 SPACEs}#..:{CTRL 8}";
     B$(A,6)             :REM*146
1260 INPUT"{CRSR DN}{CTRL 6}REM
     ARKS...:{CTRL 8}";B$(A,7)
                         :REM*162
1270 FORB=0TO7:IFLEN(B$(A,B))>1
     9THENB$(A,B)=LEFT$(B$(A,B)
     ,19)                :REM*162
1280 NEXTB                :REM*33
1290 T$="@0:":GOSUB1020:REM*171
1300 GOTO10              :REM*205
1310 REM ALPHABETIZE     :REM*161
1320 PRINT"ALPHABETIZING...{2 S
     PACEs}PLEASE WAIT" :REM*25
1330 FORA=0TON:P(A)=A:NEXT:C=0
                          :REM*67
1340 FORA=0TON-1:IFB$(P(A),0)>B
     $(P(A+1),0)THENM=P(A):P(A)
     =P(A+1):P(A+1)=M:C=C+1
                         :REM*253
1350 NEXTA                :REM*95
1360 IFC>0THENC=0:GOTO1340
                          :REM*49
1370 RETURN              :REM*153
1380 OPEN4,4             :REM*209
1390 PRINT#4,B$(A,0)+CHR$(44);S
     PC(2);B$(A,1);SPC(2);B$(A,
     6)                  :REM*219
1400 PRINT#4,B$(A,2)      :REM*85
1410 PRINT#4,B$(A,3);CHR$(44);S
     PC(2);B$(A,4);SPC(2);B$(A,
     5):PRINT#4,B$(A,7):REM*243
1420 PRINT#4             :REM*149
1430 CLOSE4:RETURN        :REM*53
1440 FORZ=65TO90         :REM*169
1450 F$=CHR$(Z)          :REM*113
1460 GOSUB980             :REM*67
1470 FORA=0TON            :REM*87
1480 FORB=0TO7           :REM*221
1490 IFE$<>"OK"THEN1560:REM*113
```

```
1500 PRINTB$(A,B):IFA+1=<NTHENP
     RINT"{CRSR UP}";TAB(20);B$
     (A+1,B):X=1          :REM*37
1510 NEXTB                 :REM*7
1520 PRINT                :REM*91
1530 C=C+1:IFC=2THEN1580:REM*63
1540 IFX>0THENX=0:A=A+1:REM*204
1550 NEXTA                :REM*40
1560 NEXTZ               :REM*250
1570 GOSUB1920:GOTO10    :REM*152
1580 C=0                 :REM*218
1590 GOSUB1920:GOTO1540:REM*102
1600 FORZ=ATON-1         :REM*210
1610 FORB=0TO7            :REM*96
1620 B$(Z,B)=B$(Z+1,B)   :REM*162
1630 NEXTB               :REM*128
1640 NEXTZ                :REM*74
1650 N=N-1               :REM*238
1660 T$="@0:":GOSUB1020  :REM*30
1670 PRINT"{SHFT CLR}PLEASE WAI
     T VALIDATING DISK":REM*242
1680 OPEN15,8,15:PRINT#15,"V":C
     LOSE15              :REM*254
1690 GOTO10               :REM*84
1700 PRINT"{COMD 7}{CRSR DN}CHE
     CKING: ";CHR$(34);F$;CHR$(
     34);" FILE ":PRINT"STATUS:
     ";E$;"{COMD 2}{CRSR DN}"
                           :REM*6
1710 RETURN              :REM*238
1720 INPUT"DATE";DT$     :REM*152
1730 OPEN4,4:PRINT#4,"TELEPHONE
      LIST";SPC(5);DT$;CHR$(10)
                          :REM*28
1740 FORZ=65TO90         :REM*214
1750 F$=CHR$(Z)          :REM*158
1760 GOSUB980            :REM*112
1770 FORA=0TON           :REM*132
1780 IFE$<>"OK"THENNEXTZ
                         :REM*168
1790 T0=39-(LEN(B$(A,0))+LEN(B$
     (A,1))):T1=20-LEN(B$(A,6))
                          :REM*44
1800 PRINT#4,B$(A,0);CHR$(44);B
     $(A,1);:FORPR=1TOT0:PRINT#
     4,CHR$(46);:NEXTPR:REM*183
1810 PRINT#4,B$(A,6);:FORPR=1TO
     T1:PRINT#4,CHR$(46);:NEXT:
     PRINT#4,B$(A,7)      :REM*75
1820 IF Z>90 THEN 1850    :REM*63
1830 NEXTA                :REM*65
1840 NEXTZ                :REM*19
1850 PRINT#4:CLOSE4       :REM*11
1860 GOTO10              :REM*255
1870 IFLEN(N$)>19THENC$(0)=LEFT
     $(C$(0),19)          :REM*13
1880 IFASC(F$)<65ORASC(F$)>90TH
     EN1900              :REM*101
1890 RETURN              :REM*163
1900 PRINT"ERROR: MUST BE ALPHA
     BETICAL!":GOSUB1920:GOTO46
     0                    :REM*63
1910 PRINT"ERROR: MUST BE ALPHA
     BETICAL!":GOSUB1920:GOTO17
     0                    :REM*71
1920 PRINT"{CTRL 9}PRESS ANY KE
     Y"                   :REM*35
1930 GETA$:IFA$=""THEN1930
                           :REM*9
1940 RETURN              :REM*213 ■
```

RUN AMOK

ITEM: We made an error in Magic trick $3CD Plus/4 Perfect Typist (April 1987, p. 12). The line numbers of the last three changes are incorrect, since the 128 Perfect Typist program was condensed in the December 1986 issue. Line 5260 is now line 140; in that line, change 022 to 020, and 023 to 021. Lines 5280 and 5290 were combined into line 150; in that line, change 116 to 115, and 117 to 116.

ITEM: Also in the April 1987 issue, a printing error occurred in the program listing for DFCalc (p. 89). A few characters were omitted from the ends of lines 3860 and 3862. They should read as follows:

```
3860 IFC$(J,W)="INS"THEN Z=Y/25
     .4:RETURN           :REM*125
3862 IFC$(J,W)="MMS"THEN Z=Y*25
     .4:RETURN           :REM*143
```

ITEM: In the May 1987 Mail RUN, the Editor's reply to Nathaniel Ireland's letter was unclear. The last sentence should read: However, for use on the 64, you must delete line 10 of ML Perfect Typist, or the program will crash.

ITEM: An asterisk inadvertently appeared (and was overlooked) against John Premack's thought-processor review article in the July issue table of contents. The asterisk is used there to indicate that an article contains a program that will appear in ReRUN, which is *not* the case with that article.

GEOWATCH

RUN's new column kicks off with a first look at the new version, GEOS for the 128.

By MATTHEW STERN

Welcome to geoWatch, *RUN*'s new monthly column for users of Berkeley Softworks' GEOS, the increasingly popular alternative operating system for the C-64 and C-128. The column will provide all kinds of information about GEOS, such as reviews of the latest GEOS programs and third-party products designed to work with them; tips on using GEOS effectively; and warnings about GEOS-related problems, along with suggestions for solving them and where to get more help. Your questions and comments may be included, too, so don't hesitate to send them along.

GEOS 128 MAKES ITS DEBUT

This month, I'm going to tell you about an important new addition to the GEOS landscape: the long-awaited C-128 version of the program. Priced at $69.95, GEOS 128 includes a new version of geoPaint, called version 1.3, which, unfortunately inviting confusion, is the same number as the 64 version. GeoPaint 128 (version 1.3) differs from the 64 version 1.3 in that you can hide the toolbox used for drawing.

GEOS 128 also includes an 80-column, 128-mode update of the C-64 geoWrite version 1.3. *Also* referred to as version 1.3, geoWrite 128 is the functional equivalent of the 64 1.3 version, except that it takes advantage of both the 80-Column mode and the faster disk access. The GEOS package also contains the latest printer and input drivers, plus the notepad, calculator, preference file and text and graphics scrapbook desk accessories. Like GEOS 64, the boot disk is copy-protected, but not the applications.

GEOS 128 takes advantage of many of the C-128's enhanced features, such as additional keys (including tab and caps lock, but, alas, not help). It uses the C-128's 2-MHz Fast mode, so it runs faster than the 64 version, and it can use the C-128's 1700 and 1750 memory expanders as RAM disks.

GEOS 128 assigns 64 of the C-128's 128K to data and program storage. It uses the other 64K as a buffer for storing, against future need, file segments that have been loaded from disk. For example, when you select a new font, it's read in from the disk. Then, the next time you specify that font, it's instantly available from memory instead of having to be read again from disk. This feature enhances GEOS's performance and speeds up applications considerably.

GEOS 64 COMPATIBILITY

You won't have to throw away your GEOS 64 programs when you get GEOS 128, because the 128 version is compatible with the 64 applications. It works fine with geoWrite 1.2 and geoPaint 1.2, as well as the newer GEOS 64 applications, such as Writer's Workshop, geoDex and the recently released geoFile and geoCalc. Unfortunately, these programs run only in 40 columns; if you launch them in 80 columns, GEOS 128 automatically changes the screen display.

You'll also find that GEOS 128 applications are compatible with GEOS 64 data files, except for those of Writer's Workshop. I can use my geoPaint 1.2 files with geoPaint 128 1.3, and my geoWrite 1.2 and C-64-generated geoWrite 1.3 files with the 128 version of geoWrite 1.3.

Berkeley plans to release C-128 versions of all their C-64 programs to take advantage of GEOS 128's additional features and its 80-column display. One of the first of these will be a Writer's Workshop upgrade. All the upgrades will be available to GEOS users at low cost.

THE MONITOR

I recommend using an RGB or a monochrome 80-column monitor with GEOS 128, because the GEOS screen is crisp, bright and easier to read in 80 columns. Of course, more will fit in the display, too. With geoWrite, you'll see the full width of a page instead of half, and with geoPaint you'll see one-fifth of a drawing instead of only one-fourteenth. This means you can use the entire width of a picture as a photo scrap. In addition to fitting more of a picture onto the screen, the 128 version of geoPaint 1.3 lets you hide the toolbox on the left side of the screen, thus creating even more drawing space.

The 80-Column mode does have some limitations. It can handle only two colors at a time (normally, light and dark gray, but other combinations are possible). Also, the aspect ratio (height to width) is different than in 40 columns, so the 80-column graphics are taller and thinner and less representational of a printout than are the 40-column.

Fortunately, GEOS 128 lets you toggle between 40 and 80 columns. To change the display, select Switch 40/80 from the GEOS menu and flick your RGB monitor's composite/RGB switch. You can change the display at any time—even in the middle of a program.

HARDWARE COMPATIBILITY

I've received a lot of mail since I first wrote about GEOS in the June 1986 issue of *RUN*, and most of the questions have been about hardware compatibility. With all the printers, interfaces, disk drives and input devices on the Commodore market, it isn't easy for a software developer to ensure compatibility with everything. However, I feel Berkeley has done well in coming out with new drivers and in fixing problems with the existing ones.

Printers have raised the largest compatibility questions. GEOS is designed to print fonts and graphics at 80 dots per inch (dpi), but some printers can produce only 60 dpi. While this doesn't pose a problem for most applications, with geoPaint, the right quarter of a full-page picture gets cut off. If you're using geoPaint with a 60-dpi printer, don't fill the right-hand quarter of the page.

In Table 1, you'll find a list that Berkeley sent me of GEOS-compatible hardware. These products were either tested by Berkeley or confirmed as compatible with GEOS by users. The printer and input drivers are available on the GEOS distribution disks, or you can find them in the public domain.

Of course, this list will expand as more products are released. In future columns I'll review the latest hardware products and let you know how "GEOS-compatible" they really are.

"Q-LINK" TO GEOS INFORMATION

If you have a modem, the best accessory you can get for GEOS is Quantum-Link. Berkeley Softworks sponsors a GEOS Forum in Q-Link's Commodore Information Network, and it's a great place to hear the latest information, get technical help and meet other GEOS users.

To ask technical questions, you leave a message on one of the Forum's message bases, and Berkeley's Rob Siegel (known online as GEOS ROB) will respond within a few days. For other types of questions, you can join in on Berkeley's monthly online conference in the Q-Link Auditorium. During the conference, you get your GEOS-related questions answered on the spot by Berkeley representatives. See the *Q-Link Update* (sent to all QuantumLink subscribers) for the dates and times of upcoming conferences.

The Forum also contains a growing collection of GEOS-related public domain software. Berkeley furnishes the latest version of the GEOS desktop, as well as new printer and input drivers, to this library, and you'll find many useful and interesting applications written by users. There's also a collection of fantastic geoPaint art "hanging" in the library.

One of the most valuable features of the GEOS Forum is the chance to meet other users. You'll learn lots of useful tips on using GEOS from them, and they'll appreciate any tips you pass along, too.

I hope you've found this first geoWatch column informative. Send me questions you'd like answered and let me know how the column can best suit your needs. My plans for future columns already include reports on the latest happenings in the GEOS Forum and the best GEOS public domain programs, as well as tips and comments from other GEOS users. Keep watching! ■

The monthly geoWatch column addresses the needs of RUN *readers who use GEOS, Berkeley Softworks' alternative operating system for the C-64 and the C-128. Your questions and comments are welcome. Send them to:*

Matthew Stern
geoWatch
c/o RUN Magazine
80 Elm St.
Peterborough, NH 03458

You can also contact Matthew Stern on Q-Link. His online name is Matt S3.

Table 1. Hardware compatible with GEOS.

PRINTERS:

60 dpi: Cal Abco Legend 800 and 808; Commodore 1525, MPS-801, MPS-803 and MPS-1000; Epson MX series; Ergo Hush 80CD; Okidata Okimate 10, 20 and 120; Riteman C+; Seikosha SP-1000VC; Star Gemini II and NL-10 (with Commodore interface).

80 dpi: Apple ImageWriter I and II, and Scribe; Blue Chip M120/10; BMC BX-80; C. Itoh 8510 and 8510A; Canon PW-1080A and PW-1156A; Commodore 1000 (parallel port only), 1526 and MPS-802; Epson FX, JX, LQ, LX and RX series; Mannesmann Talley Spirit; NEC 8023 and PC Pinwriter; Okidata Microline 92 and 93; Panasonic KX-1090, KX-1091 and KX-1092; Star Delta, Gemini 10X, Radix, NB, NL-10 (with parallel interface), NX and SG series; Toshiba PA7253.

Laser printer: Apple LaserWriter (requires geoLaser program in Writer's Workshop).

PRINTER INTERFACES:

Parallel: Cardco Card? + G, G-Wiz and Super G; Micrographix MW350; Telesys TurboPrintGT; Xetec Graphix, Super Graphix and Super Graphix Jr.

RS-232 serial: Jameco JE232CM; Omnitronix Deluxe.

DISK DRIVES:

Commodore 1541, 1541C and 1571; FSD-1; Indus GT. (GEOS might not work with drives modified with fast-loading hardware or software.)

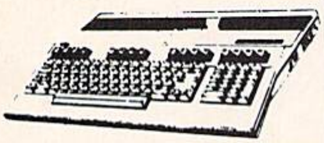
INPUT DEVICES:

Commodore 1350 and 1351 (proportional) mouses; Commodore-compatible joysticks; KoalaPad; Inkwell Flexidraw light pen; Wico Trackball.

RAM EXPANDERS:

Commodore 1700, 1750 and 1764.

commodore



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128 .... $199 95*
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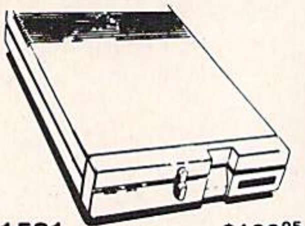
*package pricing



1581 .... $199 95
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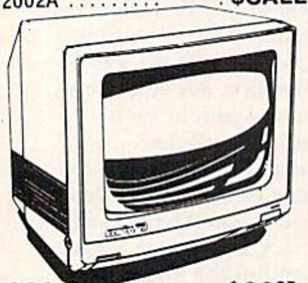
1571 .... $219 95

2002A .... $CALL



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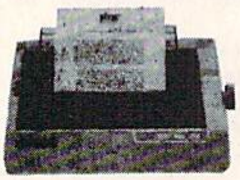
star micronics PRINTERS



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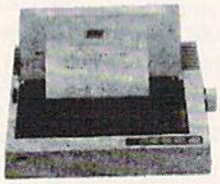

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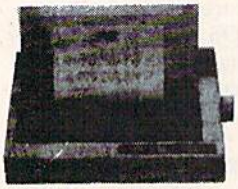
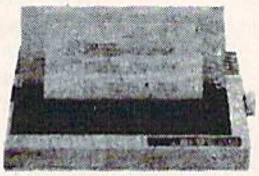


star NL-10 *229 95



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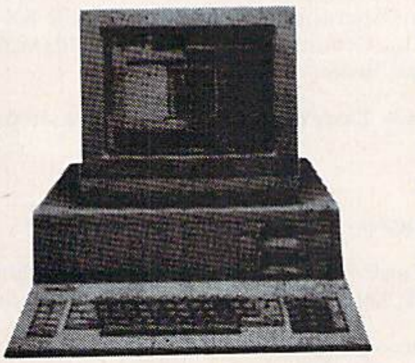

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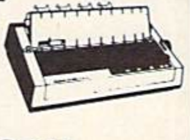

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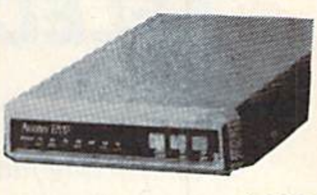

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TELECOMPUTING WORKSHOP

This month: save online time—and money—by compacting files you transmit, help some sailors with a Commodore communicate with home, and more.

By DAVID BRADLEY

One of the many letters I received from readers this past month was from Clarence R. Pierce, informing me that Bob Lentini, author of BobsTerm Pro 128, may complete the VT100 emulation part of the program if enough users show interest by leaving a message on his bulletin board. The number is 702-731-3178.

George Shirinian sent along an article entitled "Scientists Scrutinizing Flaming Computer Talk," by Erik Eckholm, that appeared in the *Toronto Globe and Mail* on October 5, 1984. Eckholm discusses how people seem more apt to be rude, profane or have outright emotional outbursts online than in person. I see good and bad in this. On the bad side, some people just want to attack and insult others to get attention. On the good side, online communication gives shy people an opportunity to be more open with others than they normally would.

A letter from a Captain Kuster relates how he and the members of his crew on a European commercial ship all have Commodores at home, so they got an SX-64 in hopes of communicating with their families at home via the Marisat ITT satellite. Unfortunately, they have not been able to get the data transfer going. I've sent them an assortment of terminal programs to try, but I haven't yet heard if any of them work. If you've had experience with satellite communications and think you might be able to help, please let me know.

Steve DiSorbo wrote with a suggestion for Richard Ott, who I mentioned in last February's column as having trouble with his 1670 modem. Richard had an Epson RX-80 printer and a Cardco-G+ interface hooked to his computer system, and sometimes the modem would work only with the printer on and sometimes only with it off. Steve suggests that Richard find out the voltage and amperage his printer interface requires and then connect it to an appropriate external power supply, instead of plugging it into the cassette port and drawing power from the computer.

I've received a number of letters from readers wondering if I'm the David Bradley who wrote the book *No Place to Hide*, published back in the 1940s. Having been born in the '60s, I'm pretty much ruled out as the author—but I *have* read the book!

Many readers have written in with questions about dialing programs, like the one featured in the movie *War-Games*. If you have a program like this, please don't use it. Such programs upset people and give all modem users a bad name. Besides, if you attempt to break into computer systems where you have no business, you can get into a lot of trouble.

I've received numerous letters asking what's the best terminal program available. I'm afraid I can't answer that question, because the best one for you depends on your needs. You may be able to get along with a fairly humble one, like Wilf Meissner of North York, Ontario, who uses a program my brother Richard and I put together over three years ago. It's very simple, with few features, but it works, does everything Wilf wants, and he's happy with it, so he sees no reason to change.

My advice is this: Find a program you like, and use it as long as it satisfies your needs, but keep an open mind and look over other programs now and again, so you'll have an idea of what's available if your needs change. If you don't change programs willy-nilly, you'll spend a lot less time dealing with problems and have more fun telecomputing.

Now let's get on to some questions and answers.

Q *My computer system includes a C-128 and an old Panasonic color television, and I can't get a readable 80-column display either online or with my word processor. Is there a way to make the TV work better?*

—PETER VOTLUCKA
LONG ISLAND CITY, NY

A I use a 1702 monitor and a Batteries Included cable (that came with PaperClip II) with my C-128, and still the output isn't too good. When I first got my C-64 in 1982, I used a TV as a monitor and found it barely adequate for 40 columns, so I bought a monochrome monitor. That was better, and I still use that monitor, although I've since upgraded to a 1701 for the color.

I don't think there's a way to get a display on your TV that you'll be happy with. I'd say either stick to 40-Column mode or buy a monitor.

Q *I'm trying to use a Total Telecommunications modem with my C-64. I get a carrier and then flip the D-T switch from D to T, but all I get on the screen is garbage. The manual that came with the modem is inadequate and doesn't help at all. I suspect the software is at fault. What do you think?*

—DOUG HORNER
CLAREMONT, CA

A The D-T switch needs to be on T when you want to *t*alk by voice and on D when you want to send and receive *d*ata. You've been switching your modem to T when it should be on D.

Q *I have an unusual problem I hope you can help me with. I have both a 64C and a C-128, along with two Commodore 1670 modems. Neither of the 1670s will work with the C-128 in any mode. However, they both work fine with the 64C. I've tested the modems with other 128 systems and get the same results.*

When I first bought the modems, they worked fine with my 128. However, it seems that after they've been used with a 64C, they won't work with a 128. Has anyone else experienced this problem? Do you have any idea what's going on? Help!

—RICHARD POPE
MADISON, TN

A I have a 1670, and it works fine with my 64, my 128, my VIC-20 and my Plus/4, so I doubt the problem is with your computer. You might try somebody else's modem on your system as a further check on your equipment.

Beyond that, all I can suggest is that you disconnect all the peripherals from your 128 except one disk drive, the monitor and the modem and try again. Printers and additional drives have been known to do strange things to telecommunications. Good luck . . .

Q *Some years ago I bought a Mitey Mo modem, but I didn't use it much because I couldn't afford the phone bills. Recently I tried to use it again, but found that the disk that came with it no longer works. I have no copy of the disk, so I've been trying to find one by writing to the Mitey Mo people and other possible sources, including my local user's group. So far I'm batting zero. Do you know where I can get a program that will make my modem work?*

—PAUL J. FRANZEL
NEW CITY, NY

A The QuantumLink software and numerous public domain and commercial programs will support your modem. Send $6 and a description of your needs to Public Domain Solutions, PO Box 832, Tallevast, FL 34270, and they'll send you an appropriate disk. Also, if you could borrow a program that downloads, you could get a program from Delphi, GEnie, CompuServe, People Link, Protocall or perhaps a local BBS.

Q *I'll be getting a Mitey Mo modem soon and will want to communicate over it with a friend. However, I don't want other people to have access to my C-64. Is there a way I can put a password on the modem to protect my system?*

—WES SNYDER
MIDDLETOWN, DE

A What you need is a bulletin board program with password capability. I'd suggest that you first get your modem and experiment with it by calling out to other systems, then, when you're comfortable with it, look for a BBS program that'll meet your needs. There are a lot of them out there—commercial, public domain and shareware.

Q *I have a C-64 and a TeleLearning Total Communications modem. The terminal program that came with the modem works fine, but I can't seem to make it up- or download. The manual says something about changing a program file to a sequential file, but not about changing it back, and I'm confused. I want to exchange files with my friends, but we're all in the same boat.*

—JOSEPH LAVIGNE
ADDRESS UNKNOWN

A The program that came with your modem doesn't support up- and downloading; all it has is a capture buffer. If you get a public domain program called ThirdTerm, your troubles will be over. It should be available from your local user's group or BBS, the TPUG section of Q-Link, Public Domain Solutions (address above) or other sources of public domain software.

Q *I have a C-128 and a Volks 6420 modem, and I want to join Quantum-Link. How do I go about it?*

—BEA SCRIBNER
SOUTH GATE, CA

A Call 1-800-392-8200 (the Q-Link customer service hot line) and tell them you want to get on board. For $9.95, they'll send you the software and a starter kit.

Q *I've heard about utility programs that compact or combine other programs to make them upload and download faster, but I haven't been able to find one. I can't even find more detailed information about what they do. Could you enlighten me?*

—CARL EPSTEIN
TORONTO, ONTARIO, CANADA

A There are three programs that do what you describe—Lynx, Library and Arc. They all do basically the same thing—combine related files into one file for up- and downloading—but they do it in different ways. With any of them, the person downloading the file must break it up into its component parts with the same utility that the uploader used.

Lynx is quite fast. It takes all the files you specify and "links" them together without moving them on the disk. The beginning of the combined file contains the information Lynx will need later to break up the file. Lynx is capable of turning an entire disk into one file on one 1541 disk drive.

Library does much the same thing as Lynx, except it rewrites all the files into one big file, leaving the original files as they were. This means that, if you have only one 1541 drive, your Library files can be only about 330 blocks long.

Arc rewrites the files as Library does, but it does a lot of compacting in the process. You end up with not only a single file, but usually one that's smaller than the total of the original files.

If you download a file and it won't run, check to see if its filename ends with the extension .LNX, .LBR or .ARC. If so, you need the same utility to dissolve it. To make matters more interesting, in some cases you need not only the same utility, but the same version. If you're not sure you have the right version, ask the person who uploaded the file.

A file with a name that ends in .SDA is a self-dissolving Arc file. All you have to do is load and run it.

Regardless of which of these utilities you use, always make a backup of your combined file. The chances of losing it when it's being dissolved are slight, but better safe than sorry!

You should be able to get Lynx, Library and Arc from a local BBS, Q-Link or Public Domain Solutions (address above). ■

Telecomputing Workshop is a monthly column dedicated to the needs of RUN *readers who are using, or intend to use, a Commodore computer for telecommunications. We invite you to submit your questions or comments to:*

David Bradley
Telecomputing Workshop
c/o RUN Magazine
80 Elm St.
Peterborough, NH 03458

HOW TO TYPE RUN LISTINGS

To simplify typing *RUN*'s C-64 and C-128 program listings, we include checksum numbers. These follow a REM statement at the end of each line (e.g., :REM*123) and necessitate your using *RUN*'s Perfect Typist programs, listed below.

Type in 64 Perfect Typist (Listing 1) for 64 programs, or 128 Perfect Typist (Listing 2) for 128-mode programs, and save it to either tape or disk before running. When you want to type in a 64- or a 128-mode program, first load and run the appropriate Perfect Typist listing. Jot down the two SYS numbers that appear on your screen. They are the SYS numbers that you type in for deactivating and reactivating the checksum program.

After Perfect Typist has been loaded and run, start typing in the program listing from *RUN*. After you press the return key to log in each line, a 1-, 2- or 3-digit number will appear below the line at the left margin. This is the checksum number, ranging from 0 to 255.

If this matches the checksum printed in the listing after the :REM*, you have typed that line correctly. Then type the next program line over the previous line's checksum value. If the checksum numbers do *not* agree, analyze the line on screen for errors or omissions. Make the needed changes and press the return key again to log them in. A new checksum will appear in place of the old one. Compare this to the magazine's number and then proceed to the next line.

When you've finished typing in your program, disable Perfect Typist by typing in the appropriate SYS number for either 64 or 128 mode, and press the return key. Now you can save your program as usual, but before attempting to run it, turn the computer off and back on to completely clear out the Perfect Typist program.

You may save an incomplete program any time and continue it later. To do so, reload and run the Perfect Typist program, then load the program you were working on, list it, and continue from where you left off.

The 128 Perfect Typist will work in either 40 or 80 columns. Also, it lets you use the C-128's automatic line-numbering. If Auto is on, the checksum will be printed below the line you just entered, and the C-128 will place the next line number below the checksum.

All listings in *RUN* have been translated so that the graphics and control characters are designated as understandable key combinations. Follow instructions inside curly brackets. For example, {SHIFT L} means you should hold down the shift key and press the L key. What you see on your screen will look quite different from what is designated inside the brackets. Another example is {22 SPACEs}, which instructs you to press the space bar 22 times. R

Listing 1. 64 Perfect Typist program.

```
1 REM 64 PERFECT TYPIST
2 REM BY: JAMES E BORDEN
10 POKE56,PEEK(56)-1:POKE52,PEEK(56):CLR
20 PG=PEEK(56):ML=PG*256+60
30 FORX=ML TO ML+154:READD:T=T+D:POKEX,D:N
   EXT
40 IFT<>16251 THEN PRINT"ERROR IN DATA..."
   :END
60 POKEML+4,PG:POKEML+10,PG:POKE ML+16,PG
70 POKE ML+20,PG:POKE ML+32,PG:POKE ML+38,
   PG
80 POKE ML+141,PG
89 PRINT"{SHFT CLR}{CRSR RT}**************
   ************************"
90 SYS ML:PRINT "{CRSR RT}** 64 PERFECT TY
   PIST IS NOW ACTIVE{2 SPACEs}**"
100 PRINT "{CRSR RT}** SYS"ML"=ON{5 SPACEs
    }SYS"ML+30"=OFF **"
101 PRINT"{CRSR RT}***********************
    ****************":NEW
110 DATA 173,005,003,201,003,208,001,096
120 DATA 141,105,003,173,004,003,141,104
130 DATA 003,162,103,160,003,142,004,003
140 DATA 140,005,003,096,234,234,173,104
150 DATA 003,141,004,003,173,105,003,141
160 DATA 005,003,096,032,124,165,132,011
170 DATA 162,000,142,240,003,142,241,003
180 DATA 189,000,002,240,051,201,032,208
190 DATA 004,164,212,240,040,201,034,208
200 DATA 008,072,165,212,073,001,133,212
210 DATA 104,072,238,241,003,173,241,003
220 DATA 041,007,168,104,024,072,024,104
230 DATA 016,001,056,042,136,016,246,109
240 DATA 240,003,141,240,003,232,208,200
250 DATA 173,240,003,024,101,020,024,101
260 DATA 021,141,240,003,169,042,032,210
270 DATA 255,169,000,174,240,003,032,205
280 DATA 189,162,003,189,211,003,032,210
290 DATA 255,202,016,247,164,011,096,145
300 DATA 013,032,032
```

Listing 2. 128 Perfect Typist program.

```
1 REM 40/80 COL C128 PERFECT TYPIST
2 REM BY: JAMES E BORDEN
10 FORX=5120TO5379:READD:T=T+D:POKEX,D
20 NEXT:IFT<>28312 THENPRINT"{2 CRSR DNs}E
   RROR IN DATA...":END
25 A$="":IFPEEK(215) THENA$="{20 SPACEs}"
30 PRINT"{SHFT CLR}"A$" ******************
   ********************"
40 PRINTA$" ** 128 PERFECT TYPIST IS NOW A
   CTIVE **"
50 PRINTA$" **{2 SPACEs}SYS 5120=ON{7 SPAC
   Es}SYS 5150=OFF{2 SPACEs}**"
60 PRINTA$" ******************************
   ********":SYS5120:NEW
70 DATA 173,5,3,201,20,208,1,96,141,45,20,
   173,4,3,141,44,20,162,43,160,20
80 DATA 142,4,3,140,5,3,96,234,234,173,44,
   20,141,4,3,173,45,20,141,5,3,96
90 DATA 32,13,67,140,255,19,162,0,142,252,
   19,142,253,19,142,254,19,189,0,2
100 DATA 201,32,240,8,201,48,144,7,201,58,
    176,3,232,208,238,189,0,2,240,54
110 DATA 201,32,208,5,172,254,19,240,42,20
    1,34,208,10,72,173,254,19,73,1
120 DATA 141,254,19,104,72,238,253,19,173,
    253,19,41,7,168,104,24,72,24,104
130 DATA 16,1,56,42,136,16,246,109,252,19,
    141,252,19,232,208,197,173,252
140 DATA 19,24,101,22,24,101,23,141,252,19
    ,169,42,32,241,20,32,188,20,160
150 DATA 2,185,185,20,32,241,20,136,16,247
    ,165,116,208,9,165,117,208,5,169
160 DATA 145,32,241,20,172,255,19,96,13,32
    ,32,162,0,173,252,19,232,56,233
170 DATA 100,176,250,105,100,202,240,3,32,
    232,20,201,10,176,5,205,252,19
180 DATA 240,15,162,0,232,56,233,10,16,250
    ,24,105,10,202,32,232,20,170,72
190 DATA 138,9,48,32,241,20,104,96,170,173
    ,0,255,72,169,0,141,0,255,138,32
200 DATA 210,255,104,141,0,255,96
```

■

RESOURCE CENTER

User's groups can play an important role in promoting computers in education, and you can get the ball rolling with these suggestions.

By MARGARET MORABITO

In last April's Resource Center, I discussed various ways to obtain low-cost educational software. That article struck a chord, and many readers have sent letters of thanks. I suggested at that time that user's groups could make an important contribution to promoting the use of good, yet affordable, programs by evaluating public domain educational software and distributing their findings to schools and parents.

In response, I heard from Dr. Robert Agostino, a professor at Duquesne University's School of Education in Pittsburgh, Pennsylvania. Robert is an ardent Commodore user and is active in the Pittsburgh Commodore Group (PCG), where he's the software librarian.

Agostino says that user's groups can help in many ways to promote educational use of computers within their groups and within the community. For example, school districts using Commodores often maintain lists of the educational software their schools use. These lists can be collected by user's groups and made available to parents who want to use a computer at home for education. PCG has compiled a five-page list of such materials from the Pittsburgh-area schools.

The PCG has also been instrumental in evaluating the CBM educational software series that I mentioned in my April column. Club members Dan and Nora Siewiorak have classified many of the programs in the series according to grades K, 1 and 5 and have compiled a disk based on this classification. The disk was offered by PCG as a disk of the month, and it's now helping parents figure out which programs do what for a given grade level.

Agostino points out that many user's groups get so caught up in mainstream activities, such as monthly meetings, BBSs and local computer shows, that they relegate education to the back burner. However, education should be a mainstream activity of user's groups, and it can easily be incorporated into existing group activities. All you need are some members with time, energy and interest in education.

Here are some educational activities PCG has undertaken. Your user's group can implement similar activities to promote computers in education.

DONATE PUBLIC DOMAIN SOFTWARE

One of my goals for the Resource Center has been to disseminate free and low-cost public domain educational software to teachers and parents, and user's groups can do the same.

Like many user's groups, PCG has a library of programs it sells to its members for low prices. Periodically, the group donates selected disks to educational institutions. Their first major donation was to the famous Carnegie Library in Pittsburgh, to enhance its newly established software lending library. Your user's group can play a similar role in helping local libraries establish software collections by following leads for public domain software. PCG has also presented educational software to several local children's centers and a Christian school.

FEATURE EDUCATIONAL SOFTWARE AT MEETINGS

Another way user's groups can promote computers in education is by featuring educational products at their meetings, along with the usual business, programming and entertainment products. Agostino's group sent for copies of the Resource Center's public domain education disks last year. Members immediately acclaimed two programs from Volume I—Lexikos, by Robert Croswell, and the Junior High Math Series, by Ricky Brewer, a junior high teacher. (By the way, I now have an updated version of Lexikos.) These disks were featured by PCG in a demonstration at one of their meetings and in a write-up in their monthly newsletter. Copies of the programs were also made available to members.

Commercial software can be featured at meetings, too. Agostino points out that some of the larger user's groups attract commercial software sales representatives who come to demonstrate their wares. Such companies should be encouraged to stress the educational applications of their products.

Many programs that aren't tagged as "educational" have educational merit. PCG members are on the lookout for latent learning possibilities in game programs. For instance, they've noted that Tass Times in Tonetown (reviewed in *RUN*'s Software Gallery, February 1987) has potential for developing vocabulary and skills in gathering evidence and making inferences.

INVOLVE CHILDREN IN CLUB ACTIVITIES

User's groups should look for ways to involve children in club activities. For instance, youngsters can gain experience in speaking to groups by giving software demonstrations at monthly meetings, thus perhaps inspiring adults in the audience who are new to computing to try new software.

Agostino further suggests that children get involved in newsletter production, perhaps by helping to fold, staple and label the finished product. This kind of activity brings young people into contact with adults, as they share in a project of benefit to the whole group. Says Agostino, "There's no better social studies lesson about democracy in action than a good newsletter production team on folding night!"

Helping to serve refreshments at meetings is another way to incorporate children into group activities. They'll learn about selling, handling money, maintaining inventory and records, serving food in a sanitary manner and even cleaning up. PCG "coffee kids" earn money for their work and sometimes use it to buy their own software from the club's store and library. Furthermore, they're recognized by the club at meetings and in the newsletter—a powerful motivator and confidence builder.

ASSIST TEACHERS

Teachers are certainly aware that computers can help in educating their students, but many still need guidance ►

RESOURCE CENTER

and training in computers and the use of software. Your user's group can be a valuable support vehicle for local school teachers who are interested in learning about computers. This support might consist of sharing software from the public domain, doing demonstrations for teachers and students, and recommending commercial and public domain programs of merit.

The PCG has found that three kinds of commercial programs initially attract teachers to computers: Print Shop-type programs and those that create word-search and crossword puzzles. Once teachers get interested in the applications of these programs, they quickly move on to more sophisticated software, such as word processors, database managers and programs for specific areas of study.

User's groups can play an on-going role in promoting computer use in local schools and educational computing in the home. If your group isn't active in this area yet, get it started with some ideas from the Pittsburgh Commodore Group.

The Pittsburgh Commodore Group is offering Resource Center readers its Siewiorak CBM educational disk for grades K, 1 and 5 ($4) and its five-page list of educational software used in schools (44¢). To get them, write to PCG, PO Box 16126, Green Tree, PA 15242. You can contact Robert Agostino on QuantumLink under the name Robert A17, or by letter at 701 Reamer Drive, Carnegie, PA 15106. ■

If you're using Commodore computers for educational purposes (at home or in school) and would like to share your experiences through the Resource Center, write me a letter detailing the equipment you're using, subject areas you teach, grade level or age of your students, software you're using and any other information you feel like including.

Also, if you'd like to donate public domain educational programs to the Resource Center for sharing with other educators or parents, please send along a disk with a brief description of the program. Send correspondence and disks to:

Margaret Morabito
Resource Center
c/o RUN Magazine
80 Elm St.
Peterborough, NH 03458

You can also leave mail in my on-line mail boxes: CompuServe (70616,714) or QuantumLink (MARGM).

MAGIC

From p. 14.

$410 Is This Your Exit?

When I add a menu to a program I'm working on, I include a Quit option. I also put in Print statements to remind me of lines I'll need to change, the values of variables, and so on. When I'm finished with the program, I remove any statements I used while I was debugging. By putting this option's code at the end of the listing, deleting such lines will not disturb the order of line numbers in the main program.

—Bob Day, Monrovia, CA

$411 Simple No-Prompt Input

Once in a while, the question mark prompt gets in the way when I'm using the Input statement. My two-liner puts an end to this pest:

```
10 PRINT "PLEASE ENTER YOUR NAME":PRINT ":";
20 OPEN1,0:INPUT#1,N$:CLOSE1:PRINT
```

The Print statement at the end of line 10 prints a prompt, but you may drop the line if you wish. The Print statement in line 20 moves the cursor to the next line when you're done with the Input statement.

—Dave Biunno, Jackson Heights, NY

$412 No-Scroll Key Disable

You can disable the no-scroll key on the C-128 by entering POKE 247,PEEK(247)OR64.

—Daihung Do, East Moline, IL

$413 Spelling Practice

Students of all ages will enjoy this program as they improve their typing, spelling and word-recognition skills. It should run on any Commodore computer.

A word from the word list is displayed on the screen in turn, then wiped out, and the student types in the correct spelling. The program displays any misspelled word to give the student a second chance before advancing to the next word.

To change the word list, enter your new words in the Data statement in line 200 of the listing. Add extra Data statements to accommodate additional words. To save the listing in 128 mode, list the directory, move the cursor to the filename, enter DSAVE"@FILENAME": and press the return key. For 64 mode: SAVE"@FILENAME",8: and press return.

```
10 REM SPELLING PRACTICE-JOE CHARNETSKI
20 INPUT"{SHFT CLR}DISPLAY SPEED 1-12";S
30 READW$:R=1
40 PRINT" {SHFT CLR} {CRSR DN} {CRSR DN} {
   CTRL 9} "W$
50 IFW$="END"GOTO150
60 X=1:FORZ=1TO1400-50*S:NEXT
70 FORZ=1TO10:GET A$:NEXT
80 T=T+1:INPUT"{SHFT CLR}{2 CRSR DNs}THE W
   ORD IS";A$:PRINT
90 IFA$=W$THENW$="<<OKAY>>":C=C+1:R=0
100 PRINTTAB(13)W$"{CRSR UP}"
110 FORZ=1TO150:NEXT:X=X+1:IFXAND1GOTO100
120 IFX<12THENPRINT"{CTRL 9}";:GOTO100
130 IFRTHENR=0:GOTO40
140 GOTO30
150 PRINT"{CRSR DN}RIGHT=";C
160 PRINT"{CRSR DN}WRONG="T-C
170 INPUT"{CRSR DN}WANT TO PRACTICE MORE (
    Y/N)";K$
180 IFK$="Y"THENRUN
190 PRINT"{CRSR DN}BYE..."
200 DATA ACCOMMODATE,WEIRD,SUPERSEDE,PSYCH
    OLOGY
999 DATA END
```

—Joseph R. Charnetski, Dallas, PA

$414 PAGE PRINTER

When printing program listings on my MPS-801 printer, I find it difficult to line up the paper so that some line of text isn't cut in half by the perforations. The short program below allows you to set a bottom margin to overcome this problem.

```
10 REM PAGE - MICHAEL MYERS
20 FORI=53100TO53189:READQ:POKEI,Q:CK=CK+Q
   :NEXT
30 IFCK<>13039THENPRINT"ERROR IN DATA"
40 DATA 169,157,141,38,3,169,207,141,39,3,
   169,3,133,252,32,253
50 DATA 174,32,107,169,165,20,72,198,252,2
   08,243,104,141,172,207,104
60 DATA 141,166,207,104,141,148,207,169,66
   ,133,251,32,253,174,76,164
70 DATA 166,201,13,208,31,198,251,165,251,
   201,2,208,21,138,72,162
80 DATA 3,189,192,207,32,210,255,198,251,2
   08,249,104,170,173,148,207
90 DATA 133,251,169,13,76,202,241,141,10,1
   0
```

To use the new page lister, use the following syntax:

```
OPEN4,4:CMD4:SYS53100,page length,bottom margin,device
  number,range
```

The Open and CMD statements are only required for output to the printer. The page length should be from two to 66 lines, and the bottom margin must be at least one line, but less than the page length. Send the listing to the screen with device number 3, or use your printer's device number for a hard copy. The range is the same as that used after the Basic List command.

To send output to your printer, type in PRINT#4:CLOSE4 to clear the channel. You should press run-stop/restore when the listing is finished, to restore the pointers used by the Kernal CHROUT routine.

If you want to double-space your listing, use a page length of 2 and a bottom margin of 1.

—MICHAEL MYERS, BEARDSTOWN, IL ■

Magic is the original *column of reader-submitted hints and tips. Each month we present brief, useful computer tricks to help you get the most out of your Commodore system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for* RUN*'s imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to:*

Magic
RUN Magazine
80 Elm St.
Peterborough, NH 03458

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RUN it right: **C-64; printer (optional)**

MEGA-MAGIC

Now you have a search and locate feature for your C-64.

C-64 LOCATOR

One feature possessed by screen editors on many computers more powerful than the C-64 is a locator function for finding all occurrences of a specific string in a listing. String Locator (Listing 1) fills this gap by locating all the lines containing a specified string of characters and printing their numbers to the screen or printer.

After you've typed in and saved Listing 1, run the program to activate the Locate function. You can then type in or load a program and use this function to help you debug or analyze a program.

Each Basic command is stored in memory as a single character. If you could peek inside memory for the word PRINT, for example, you wouldn't find it, because the editor automatically tokenizes the word to one character. However, Basic doesn't tokenize any word enclosed in quotation marks.

It's obvious, then, that the locate function must be able to distinguish between tokenized and untokenized strings. If, for example, you type in LOC GOTO, the program locates all tokenized occurrences of GOTO, whereas typing in LOC ↑GOTO finds all instances of GOTO within quotes.

Your computer then asks if you want the line numbers where a string's been found to be sent to the screen (press S) or the printer (press P).

The function occupies memory locations 49152–49797 ($C000–$C285). So, if you're using a machine language routine with your Basic program, make sure that it doesn't occupy this area. If it does, deactivate the Locate function before you run your program by entering SYS 49155 and pressing the return key.

The more you use this program, the more you'll wonder how you ever got along without it! Ⓡ

—ALTON C. WILLIAMS, HUNTSVILLE, AL ►

Listing 1. Locate String program.

```
10 REM LOCATE STRING - A C WILLIAMS
                                :REM*186
20 PRINT"{SHFT CLR}":PRINT:PRINT:PRINT"...
   .ONE MOMENT PLEASE"          :REM*134
30 FORI=49152TO49797:READX:POKEI,X:T=T+X:N
   EXT:PRINT"{SHFT CLR}"         :REM*26
40 IF T<>73960 THEN PRINT"ERROR IN DATA ST
   ATEMENTS!":END               :REM*110
50 SYS49152:PRINT"LOCATE FUNCTION 'LOC' IS
    ACTIVATED"                  :REM*186
60 PRINT:PRINT"TO DEACTIVATE USE: SYS49155
   "                            :REM*216
70 PRINT:PRINT"TO REACTIVATE USE: SYS49152
   ":NEW                        :REM*248
80 DATA 76,75,193,76,86,193,255,0,255,0,25
   5,32,56,223,173,9,192,141,10   :REM*214
90 DATA 192,169,0,141,6,192,141,11,192,173
   ,9,192,240,5,173,8,192,208,1,96 :REM*96
100 DATA 160,255,173,10,192,205,8,192,240,
    16,136,136,200,204,8,192,240,8:REM*124
110 DATA 204,10,192,208,245,76,38,192,174,
    11,192,142,12,192,162,0,134    :REM*36
120 DATA 254,172,12,192,238,12,192,177,252
    ,164,254,209,250,240,10,238,11:REM*242
130 DATA 192,206,10,192,240,197,208,196,23
    2,236,8,192,208,224,169,1,141 :REM*122
140 DATA 6,192,96,32,96,165,134,122,132,12
    3,32,115,0,208,3,76,128,164     :REM*44
150 DATA 201,76,240,7,162,255,160,1,76,134
    ,164,32,115,0,201,79,208,242  :REM*166
160 DATA 32,115,0,201,67,208,235,32,115,0,
    240,223,166,122,160,0,189,0,2 :REM*150
170 DATA 153,0,2,240,4,232,200,208,244,162
    ,0,134,122,142,8,192,160,1,132:REM*108
180 DATA 250,200,132,251,198,250,32,196,19
    3,230,250,162,0,189,0,2,201,94 :REM*56
190 DATA 208,3,232,208,7,32,121,165,162,0,
    134,250,189,0,2,240,6,232,238  :REM*98
200 DATA 8,192,208,245,165,43,133,122,165,
    44,133,123,169,0,141,13,192   :REM*214
210 DATA 169,0,141,9,192,160,4,177,122,240
    ,6,200,238,9,192,208,246,165   :REM*70
220 DATA 122,24,105,4,133,252,165,123,105,
    0,133,253,32,14,192,173,6,192  :REM*92
230 DATA 240,6,238,13,192,32,97,193,160,0,
    177,122,208,25,200,177,122,208 :REM*66
240 DATA 20,173,13,192,240,6,32,182,193,76
    ,128,164,32,146,193,32,182,193 :REM*60
250 DATA 76,128,164,160,0,177,122,141,11,1
    92,200,177,122,133,123,173,11 :REM*180
260 DATA 192,133,122,76,236,192,169,111,14
    1,2,3,169,192,141,3,3,96,169  :REM*145
270 DATA 131,141,2,3,169,164,141,3,3,96,16
    0,2,177,122,141,11,192,200,177 :REM*69
280 DATA 122,172,11,192,132,99,133,98,162,
    144,56,32,73,188,32,221,189    :REM*57
290 DATA 169,0,160,1,32,30,171,173,13,192,
    201,7,208,8,32,154,193,169,1  :REM*145
300 DATA 141,13,192,96,169,112,160,194,32,
    30,171,96,169,13,32,210,255,96:REM*251
310 DATA 169,0,32,189,255,169,4,170,160,25
    5,32,186,255,32,192,255,162,4 :REM*173
320 DATA 32,201,255,96,169,13,32,210,255,3
    2,204,255,169,4,32,195,255,96 :REM*163
330 DATA 169,3,160,194,32,30,171,32,228,25
    5,201,80,208,9,32,251,193,32   :REM*39
340 DATA 160,193,76,223,193,201,83,208,236
    ,169,53,160,194,32,30,171,165  :REM*85
350 DATA 250,164,251,32,30,171,32,154,193,
    32,154,193,169,79,160,194,32  :REM*125
360 DATA 30,171,96,169,28,160,194,32,30,17
    1,96,40,80,41,82,73,78,84,69  :REM*125
370 DATA 82,32,79,82,32,40,83,41,67,82,69,
    69,78,63,13,13,0,79,78,69,32  :REM*131
380 DATA 83,69,67,79,78,68,32,80,76,69,65,
    83,69,46,46,46,46,46,13,13,0  :REM*149
390 DATA 83,84,82,73,78,71,32,83,69,65,82,
    67,72,69,68,32,70,79,82,58,13   :REM*3
400 DATA 32,32,32,32,0,76,73,78,69,32,78,8
    5,77,66,69,82,83,32,79,70,32  :REM*171
410 DATA 65,76,76,32,79,67,67,85,82,69,78,
    67,69,83,58,13,0,46,46,46,46   :REM*47
420 DATA 46,83,84,82,73,78,71,32,78,79,84,
    32,70,79,85,78,68,0              :REM*61■
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COMMODORE CLINIC

Can you leave your computer system on forever without damaging it? Is there a program for bridge tournaments? These and other questions are answered this month.

By JIM STRASMA

SOFTWARE

Q *When I upgraded from a C-64 to a C-128, my troubles began. When I transferred database records, first to Consultant 128 and later to Superbase 128, the programs had great difficulty sorting my 3000 records. Progressive Peripherals told me the problem is in a 1571 disk chip and that they haven't been able to program around it. I contacted Commodore on QuantumLink and was told there is nothing wrong with the chip in the 1571. Wanting to speak directly with someone at Commodore, I called the company at 215-431-9105.*

I called every day for a week, sometimes repeatedly for over two hours, and received only busy signals. I finally got through, and someone there told me to call 215-436-4200 with any technical questions. The first time I called, a recording told me to call 215-431-9100 during normal business hours with any technical questions! That was three weeks ago. I haven't gotten through to them since! I either get a busy signal, a recording, or no answer at all.

Can you tell me anything about the 1571 chip, and also how I can reach out and touch someone at Commodore to tell them what I think of their non-existent service?

—ROBERT GELISKE
PONTIAC, MI

A As for telling off someone at Commodore, you've just done so, eloquently, on behalf of many other readers who also could not get any response from them.

Since you encountered your sorting problem with two different top-flight programs, your problem is almost certainly due to a 1571 ROM bug. Since you are storing a relatively large amount of data, my guess is that the culprit is the bug a Commodore document dated last September described as follows: "With multiple files open and sectors being allocated on both sides [of the disk], the BAM swapper mechanism would trash BAM side one." If not, perhaps it's due to one of the 13 other 1571 ROM bugs listed on the same page, or in the nine pages of other C-128 problems described in the same document. That's the bad news. The good news is that, according to the same document, these faults were corrected in an unreleased set of four Version 3 ROMs. The remaining problem is how to convince Commodore to admit there is a problem with the existing ROMs and to make the updated ROMs available.

Q *I want to speed up my C-128's disk operations for its C-128 and C-64 modes. Can you suggest a cartridge or a replacement for the Kernal ROM? Also, do you think that replacing the Kernal ROM would incur compatibility problems with protected software?*

—WESLEY BURCHARDT
TAMPA, FL

A I hear only good things about Access Software's Mach 128. Unlike speedup cartridges for the C-64, you don't have to unplug Mach 128 to use the 128 mode, and it speeds up disk access in both C-64 and C-128 modes. If you do encounter a protection problem, however, just remove the cartridge.

A new Kernal ROM would be more convenient and might also correct some of the problems with the C-128 ROMs, but if you get one, be sure it has a switch to instantly revert to the built-in Kernal ROM. Otherwise, you are sure to have problems with some of the more paranoid among today's copy-protected programs.

Q *Is there a program for the C-128 or C-64 that's similar to Silicon Office for the CBM 8096?*

—RODNEY WILLIS
FLORAL CITY, FL

A Silicon Office combined a relational data manager and a good word processor into a single program. It's still available in an improved version for Commodore's IBM-compatible PC-10 computer, but not for the C-128 or C-64.

Your best bet may be programs that are designed to work together, but that are not actually sold as one package. For instance, Precision Software's Super Office for the 8096 was both better and cheaper than Silicon Office, and all of its constituent parts (Superbase, Superscript and Superspell) are currently available for both the C-64 and C-128, although not yet as a single, integrated program.

HARDWARE

Q *Can I use my C-128 to communicate via modem with another C-128 in Iceland?*

—G. VIDARSSON
SANTA BARBARA, CA

A Sure. Almost any 1200-baud modem compatible with your system should be suitable. Unlike 300-baud modems, 1200-baud units use a compatible protocol in both the U.S. and Europe.

Q *I need your help in finding a letter-quality printer for my C-64. I use the C-64 with a dot-matrix printer, which is excellent for drafts, but not for correspondence.*

—JEAN SPENCER
GREENBELT, MD

A The key to success in choosing the right printer for word processing is to choose the one recommended by the manufacturer of your word processing program. It's the only way to be sure that the program will support all of the printer's advanced features, and that the printer will support all those of the program. I've always used models from the C. Itoh Starwriter line, using a Cardco interface, but other users are just as happy with one of a dozen other brands, so long as the printer and interface are supported by the word processing program that will be used with them.

One other warning. If you want a ►

tractor-feed or sheet feeder, get one when you buy a printer. Later you might find both more costly to buy and very difficult to locate.

Q *How do I use the right-hand button on my 1350 mouse with the C-128?*

—BILL LEAGANS
PRATTVILLE, AL

A The right-hand button on your mouse is connected to pin 9 of the control port, which was originally intended to be used by the potentiometer on one of a pair of game paddles. The May 1987 issue of *The Transactor* (416-878-8438) details the procedure for adding a 47K pull-up resistor between pins 7 and 9 to make the right button readable at address $D419; the issue also gives you the needed assembly language programming to use the button (and the rest of the mouse). It's not written for beginners, but it should solve your problem nicely, as long as you know how to use both a soldering iron and an assembler.

Q *My computer system and lights are all plugged into the same circuit, the computer system via a surge protector power strip, and both lights and equipment dim whenever the furnace kicks on. So far, the circuit breaker has tripped twice. Is there an uninterruptible power supply (UPS) for the Commodore? I don't want to relocate my system or reroute the wiring if I can avoid it.*

—KAREN LANDRETH
CAMDEN, SC

A Yes, there is. However, the least expensive UPS I could find is the UPS-210, a $250 unit from Power General Corp. (617-828-6216). Typical UPS prices run to several thousand dollars.

I can't recommend a UPS, however, even without considering its cost. You'd be better off installing a new circuit for your computer system and lights. Even using an extension cord plugged into an outlet on a separate circuit would probably be safer than your current setup.

Q *My Apple- and IBM-compatible joystick uses x- and y-axis trimmers. Can it be adapted for the C-64?*

—ED JUZUMAS
SEAFORD, NY

A Yes, but not as a regular digital joystick. It could, however, be connected as an analog joystick, or more precisely, as a pair of game paddles, since at heart your joystick is a pair of potentiometers, the same as a Commodore or Atari paddle.

The *Transactor* article mentioned above gives details for wiring up an analog joystick, and a sample assembly language program to use with it.

You can also use the unaltered joystick with all available software for the Commodore PC-10 IBM-compatible computer.

Q *I'm looking for a color monitor for my SX-64. Any suggestions?*

—RUPERT TOBISCH
WALNUTPORT, PA

A I've used the Commodore 1702 monitor with excellent results, but if I were to buy one now, I'd probably get the 1902 for its color capability in 80-Column mode.

Q *I own a VIC-20 and a 1540 disk drive. I've upgraded to a C-128, but I can't use the drive with it. Are there any chips available to turn the 1540 into a 1541?*

—LUIS RAMOS MARCIN
MEXICO D.F., MEXICO

A All you need to upgrade your 1540 to a 1541 is a replacement Kernal ROM for the 1541. You should be able to get one from any authorized Commodore service center. If not, order one from *The Transactor* (see above) for $60 Canadian.

PROGRAMMING

Q *Can you give me any leads to a bridge-tournament program that pairs each of 20 players as a partner with every other player once in a cycle, and that pits each player against every other player twice?*

—DOUG HALLER
CAPAC, MI

A Two bridge players assure me that you can only do this for groups whose size is an even power of 2; hence, the closest solution to your request is for a group of 16, or, if you can add more players, a group of 32.

Long before the first modern computer was built, my father solved the same problem for his bridge club, arranging a progression that not only fulfilled the conditions you mention, but made sure each pair of partners included an odd and an even number. (They gave odd numbers to men and even numbers to women.) Here's Dad's algorithm, converted to Basic:

```
100 REM BRIDGE PAIRINGS BY ROY
    STRASMA
110 DEVICE=3:REM 4 FOR PRINTER
120 OPEN 4,DEVICE
130 FOR I=1 TO 15 STEP 2
140 : PRINT#4,"Player #";I
150 : FOR J=1 TO 7
160 : : READ WITH,TABLE
170 : : PRINT#4,"With Player #";WITH;
180 : : IF WITH < 10 THEN PRINT#4," ";
190 : : PRINT#4,"at Table #";TABLE
200 : NEXT J
210 : PRINT#4
220 NEXT I
230 CLOSE 4
240 DATA 02,1,10,1,06,4,08,4,04,3,16,3,12,1
250 DATA 04,1,12,2,08,2,06,3,02,4,14,2,10,1
260 DATA 06,2,14,1,02,3,04,2,08,4,12,1,16,2
270 DATA 08,2,16,2,04,1,02,1,06,3,10,4,14,2
280 DATA 10,3,02,3,14,2,16,2,12,1,08,3,04,3
290 DATA 12,3,04,4,16,4,14,1,10,2,06,2,02,3
300 DATA 14,4,06,3,10,1,12,4,16,2,04,1,08,4
310 DATA 16,4,08,4,12,3,10,3,14,1,02,4,06,4
```

If anyone has a shorter program for a variable-sized group, I'd like to hear from you.

OTHER

Q *Do you have a book for beginners, beginning with how to turn the computer on?*

—MARY HYRE
CHATTANOOGA, TN

A We sure do. My wife, Ellen, and I have written two books for beginners. One is the *Consumer Guide User's Guide to Commodore 64 and VIC-20 Computers, Software, & Peripherals*, from Publications International of Skokie, Illinois. The other is *The Time/Life Step-by-Step Guide to the Commodore 64*, from Random House, New York. You can order them from your local bookstore. ■

Do you have a problem or question about your Commodore computer? Commodore Clinic can help. Just send your question on a postcard to:

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Queries are answered only through this column, and, due to the volume of mail, only questions that appeal to the majority of our readers can be published.

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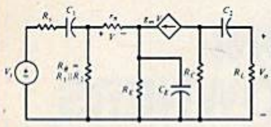

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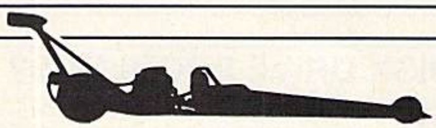

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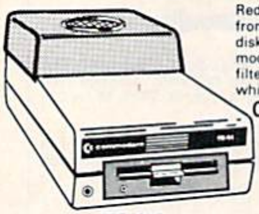

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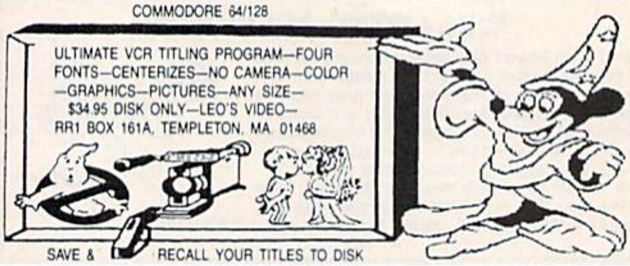

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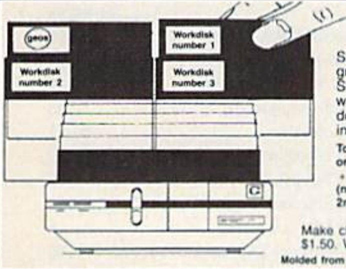

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Two feature articles in the September issue will describe how to tap into this vast world. Margaret Morabito will survey the most popular national online networks. Accompanying her article will be a report on telegaming by *RUN*'s technical manager Louis Wallace.

The second article, by Telecomputing Workshop columnist David Bradley, will explore the ins and outs of the modems and terminal programs that put you online. Of course, the Workshop will be in the magazine as usual, too.

September's Resource Center column will also be devoted to telecommunications, as Margaret Morabito samples educational online services.

SUMMER CES— The semiannual Consumer Electronics Show continues to showcase the latest in personal computer products. For a sneak peek at the hardware and software that will appear on the market between now and the holidays, read our report.

128 NOTEPAD— Next month will also bring the C-128 version of our popular desktop accessory. The 128 Notepad program opens a window in the screens of other programs you're using, so you can type and save computing notes. Notepad also displays the time of day and provides access to a variety of disk operations.

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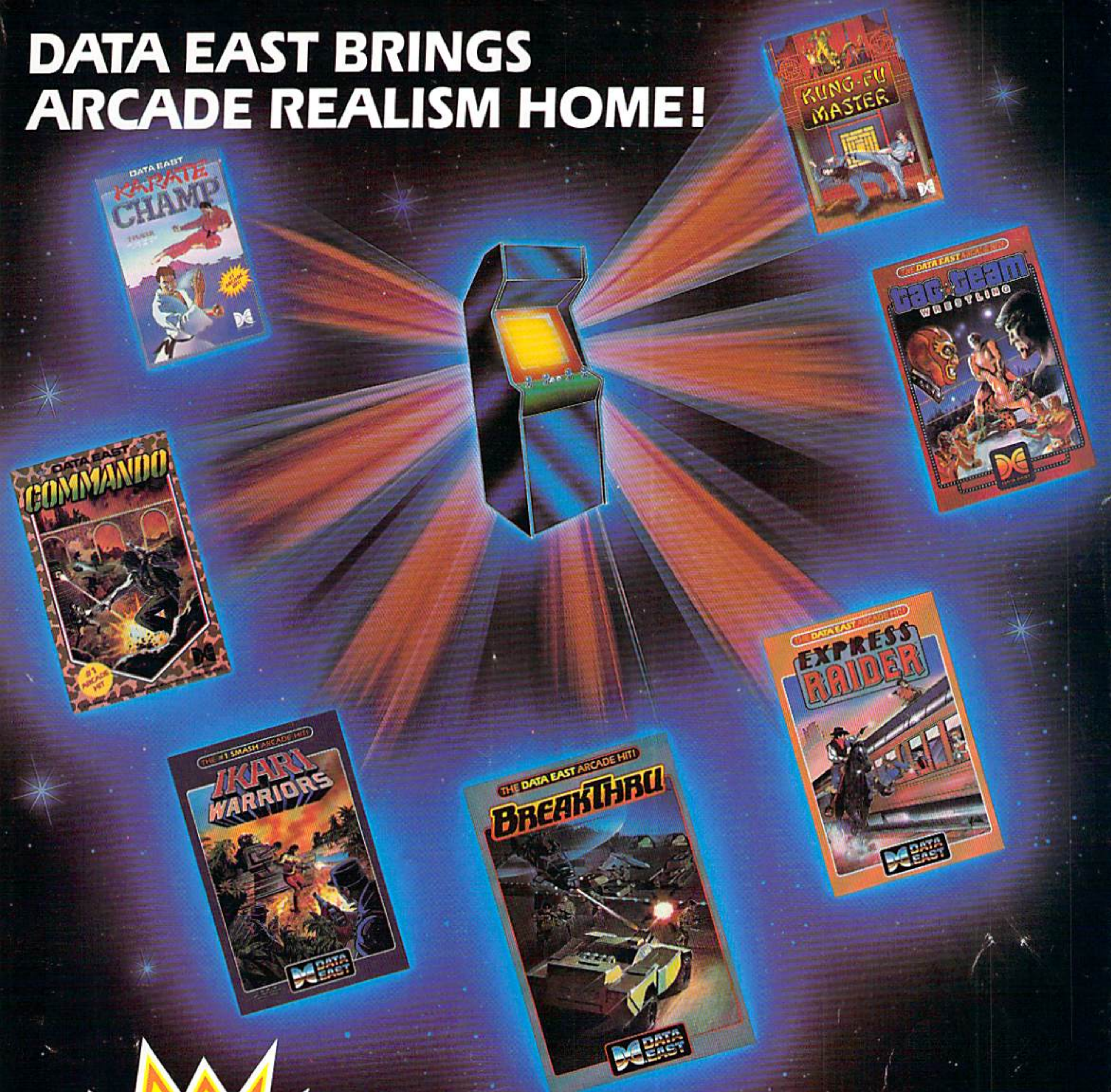
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